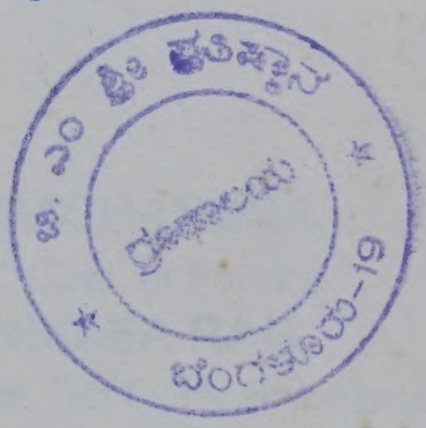
PRACTICAL EXERCISES IN OBJECTIVE TYPE FOR ENGINEERING AND MEDICAL COLLEGE ENTRANCE EXAMINATIONS

BIOLOGY

Dr. R. RAMACHANDRA
Dr. A.H. RAMA RAO
Prof. B.M. SRINIVASA RAO
Prof. S. DESIKACHAR

THE NATIONAL COLLEGE, BASAVANAGUDI,
BANGALORE – 560 004

Published by
EXCELLENT EDUCATIONAL ENTERPRISES



PRACTICAL EXERCISES IN OBJECTIVE TYPE FOR ENGINEERING AND MEDICAL COLLEGE ENTRANCE EXAMINATIONS

BIOLOGY

Dr. R. RAMACHANDRA,
Prof. & Head, Dept. of Physics
B.M. SRINIVASA RAO,
Former Prof & Head, Dept. of Mathematics
S. DESIKACHAR,
Prof. & Head, Dept. of Chemistry
Dr. A.H. RAMA RAO,
Reader, Dept. of Physics

THE NATIONAL COLLEGE, BASAVANAGUDI,
BANGALORE – 560 004

Published by

EXCELLENT EDUCATIONAL ENTERPRISES

(Dedicated to applications of Computers in Education)

No. 21, III Main Road, Rammohanapuram, Srirampuram, Bangalore – 20.

First Edition – April 1985

This book has been written in accordance with the syllabus prescribed by the Karnataka Government for Joint Entrance Examination for admission to Engineering and Medical Colleges

Published by EXCELLENT EDUCATIONAL ENTERPRISES
No. 21, 3rd Main Road, Rammohanapuram, Srirampuram, Bangalore 560 021.

Price Rs. 20

Printed at B.B.D. Power Press, Bangalore

CONTENTS

FOREWORD

As we know, examinations play an important part in any pattern of education in any country and more so in our country. Selections to various higher courses and getting employment mostly depend on the performnce in certain crucial examinations. The Pre-university examination is one such. In order to eliminate certain anomalies and loopholes in selecting students for the medical and engineering courses based on the marks in the Pre-university examinations, Karnataka Government introduced last year for the first time a common entrance examination for admission to engineering and medical degree courses. The questions were of objective type capable of being evaluated by using computers.

The objective type of question papers have certain distinct academic and practical advantages specially for selection of candidates to important courses. But then, teaching and the type of question papers cannot be adjusted solely for this purpose at the Pre-university level. Consequently, there is a great need to supplement the Pre-university text books with publications which will be of great use for students to take such an objective type of examination. The **Practical Exercises in Objective Type for Engineering and Medical College Entrance Examinations** fulfills that need admirably in each of the volumes in Physics, Chemistry, Mathematics and Biology.

Each volume has more than 1,750 exercises. If a student is thorough with these exercises, it will not only enable him to do very well in the Entrance Examinations, but will also enable him to have a good grasp of the subject. Hence this publication is not meant as a kind of a cheap notes or a short cut solely with the intention of taking the exams.

All the four authors have been very good teachers with rich experience. I know all of them very intimately as they were my colleagues in the National College Basavanagudi when I was a teacher and the Principal. Another feature of this publication is the association of Sri. M.G.Vedavyas, B.E., M.B.A. a brilliant old student of the college with a lot of drive and innovative qualities to promote the application of computers in the field of education.

I am very happy that the publishers have included in each volume the Fundamental Duties of Citizens enshrined in the Constitution of India. This is very appropriate and for the first time the Fundamental Duties of Citizens have seen the light of the day in such a form. I heartily congratulate the authors and the publishers on having brought out very useful volumes both from the point of view of the Entrance Examinations and also from the point of view of having a good understanding of the subject.

15.4.1985
Bangalore

H. NARASIMHAIAH
Former Vice-Chancellor, Bangalore University
and
President, The National Education Society of Karnataka, Bangalore.

A MUST FOR THE READERS

It is the experience gained at the portals of the National College, Basavangudi, which prompted us to present these excellent four volumes to our readers. Testing students by objective type of questions has come to stay. Already, at institutes of higher learning in our country and elsewhere, this mode of screening the students has gained popularity and acceptance. In line with this modern trend, the Karnataka Government decided last year to conduct Joint Entrance Examinations to select students for Engineering and Medical Institutions.

The examination is conducted at **Second Pre-university Standard.** Hence, a large number of exercises from second year Pre-University, a significant number of exercises from First Year Pre-university and a practice paper to make you more perfect are included in each volume. Thus, you have access to well over 1,750 exercises in each volume. Needless to stress that such exhaustive treatment prepares you well for competitive examinations. The same type of exercises can be reshaped into fill in the blanks, match properly etc.

Every student knows that the questions of earlier examinations will most likely not appear in the current year's examination . Hence a practice paper conforming to the format of the entrance examination is included at the end of each volume.

In entrance examinations, there is no question of passing marks. One has to aim at securing high marks by answering correctly as many questions as possible. Question papers of entrance examinations are usually designed to cover almost all the topics in the syllabi without leaving any scope for guessing.

General Tips

1. In view of the limited time, you have to give up the orthodox method of selecting questions after going through the entire question paper.
2. To save time, start answering from the beginning and pass on to the other end, ticking the questions answered.
3. You must bear in mind that you should not have bias regarding topics. This will avoid as far as possible, returning to the questions, after reaching the end, frequently.
4. If there is negative marking, it is better to attempt questions for which you definitely know the answers.
5. DO NOT FORGET that the chance of scoring high marks does not depend only upon attempting maximum number of questions. **The key to success lies in being fast and accurate.**

– AUTHORS

SURPRISE PACKAGES

Rules and regulations

It has been decided to award cash prizes to the winners of top ten places in the Karnataka Joint Entrance Examination for admission to Engineering and Medical courses 1985.

First Place: Rs. 250/- Second to Tenth Place: Rs. 150 each.

All the students who purchase all our four volumes are eligible to win this package provided they satisfy the following conditions.

1. They should mail the four entry forms together, one from each volume, completely filled in all respects so as to reach the publishers latest within 5 days after the completion of the Joint Entrance Examination 1985
2. All the four entry forms should be identical in all respects.
3. Prizes will be sent by mail to the winners at the appropriate time.
4. No other correspondence will be entertained in this regard.
5. The decision of the committee constituted for this purpose by the publishers shall be final and binding on one and all.

---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ✂ CUT HERE

ENTRY FORM BIOLOGY

Name of the participant _____

Reg. No. of the participant in the Joint Entrance Examination, 1985 _____

Address to which the prize should be sent

_____

_____

_____ PIN _____

I agree to abide by the rules and regulations of the surprise packages.

Date Signature of the participant

CUT HERE ✂ ---- ---- ---- ---- ---- ---- ---- ---- ---- ----

ACKNOWLEDGEMENTS

Our sincere thanks are due to

Dr. H. Narasimhaiah, President, The National Education Society of Karnataka, Bangalore

M/S B. B. D. Power Press, Bangalore

M/S Indian Reprographic Systems Pvt Ltd

All those involved in the production of this magnificent volume

– Authors and Publishers

READERS SHOULD KNOW

that in examinations involving objective types, the questions can be broadly classified into four categories depending on the duration of time needed to answer them. Accordingly, in these volumes, some exercises need 30 seconds, a second category needs 60 seconds, a third category needs 90 seconds and the rest need about 120 seconds each to answer. It is for the readers to spend time accordingly on each question.

-------AUTHORS

WORKED EXAMPLES

The objective type of questions are the thought provoking ones. A lot of mental exercise is required to answer them. In contrast to essay type answers, the objective or multiple choice questions expose one's depth of knowledge in the subject and call for common sense and presence of mind. In biology it is more difficult to pin point the answer critically as it is a descriptive subject, unlike Mathematics or Physics or Chemistry where calculations and formulae come to rescue.

For every question four answers are suggested. Often, more than one answer seem to be suitable. In such cases one should judge the most correct answer. Questions are of different categories. Some test the depth of knowledge in the subject and some the ability to judge and select a critical answer. The student must understand the subject matter with correct biological terminologies before answering . A quick and logical thinking is essential to answer. Here are model questions to guide you in the method of answering.

1. Autosomes are

(a) automatic chromosomes (b) self dependent chromosomes
(c) somatic chromosomes (d) sex chromosomes

This is a question based on the type of chromosomes and it can be answered logically as follows:

(i) No chromosome is named as automatic which refers to the action. Hence (a) is not a correct answer.

(ii) If we see the prefix auto, we should not jump to the conclusion that it is self dependent as chromosomes are just self duplicating. Hence (b) is not a correct answer.

(iii) Chromosomes are classified into somatic (autosomes) and sex chromosomes (allosomes). Hence (d) is not the correct answer.

(iv) Therefore (c) is the correct answer.

Here the student should know the classification of chromosomes.

2. Coloured plastids are

(a) chromoplasts (b) leucoplasts
(c) chloroplasts (d) phaeoplasts

This is a question which tests the common sense of the student regarding pigments in plants.

Leucoplasts, though we say, are colourless, contain starch which is white. Chloroplasts are green colour. Phaeoplasts are brown in colour. All these are of different colours. 'Chromoplast' is a general term for coloured plastids. (b), (c) and (d) are all particular types of chromoplasts and are hence contained in (a). Thus, though (a), (b), (c) and (d) fit as answers, the most correct answer is (a).

3. Growth

(a) is an irreversible change (b) is a permanent change

(c) results in the increase of dry weight of an organism
(d) all these

Here, it is required to know the definition of the process of 'growth'. It can be described as "the permanent, irreversible change resulting in the increase of dry weight of an organism." It can be noticed that the definition is contained in parts in the first three answers. So, (a), (b) and (c) are all correct. Thus it follows that the answer (d) is most correct.

4. The central core of the root or stem which encloses the vascular bundles is called

(a) steal (b) steel (c) stele (d) all these

This question will test the student regarding the correct spelling for a technical word.

The word 'steal' is functional meaning to rob. The word 'steel' refers to an alloy. Therefore (a) and (b) are not correct answers. Since (a) and (b) are not correct, it obviously follows that (d) is not correct.

The term 'stele' refers to 'pillar' which supposrts mechanically. Hence, the vascular bundles in the centre supports stem or root. Hence (c) is the correct answer.

5. With reference to neurulation in frog, which of the following sequences is correct?

(a) Neural tube, neural fold, neural groove and neural plate
(b) Neural plate, neural groove, neural tube and neural fold
(c) Neural plate, neural tube, neural groove, neural plate
(d) Neural plate, neural groove,neural fold and neural tube

(a) During neurulation, the cells of the neurectoderm gradually become differentiated into a neural plate. Since the first step is the formation of the neural plate, the answer (a) is not correct.

(ii) Subsequently the margin of the neural plate becomes thicker and central region becomes thinner to form a neural groove. Hence the answer (c) is not correct.

(iii) The edges of the neural groove now curve inwards to form the neural folds. Hence (b) is not correct.

(iv) The neural folds gradually bend towards each other and meet only at the middorsal line to form the neural tube. Hence the answer (d) is correct.

Here, the student is required to know the subject matter clearly.

6. Spot out the stranger.

(a) Liver (b) Salivary glands (c) Gastric glands (d) Pancreas

Here, all the glands are no doubt digestive in function. But the difference is in the fact that all the glands except the pancreas are only exocrine in function whereas the pancreas is both exocrine and endocrine in function. Hence the answer (d) is correct.

7. The covering of the heart is called

(a) perichondrium (b) periosteum
(c) pericardium (d) none of these

Here the term peri means outside (the covering). In (a), the term chondrium refers to the matrix of the cartilage which is made of chondrin. Here it refers to the covering of the cartilage. Hence (a) is not correct.

In (b), the osteum refers to the matrix of the bone. Hence, it means the covering of the bone. So, it is not the correct answer.

In (c), the term cardium refers to the heart. Hence (c) is the correct answer.

8. The endoderm is otherwise known as

(a) epiblast (b) mesoblast (c) hypoblast (d) none of these

In the triploblastic body wall of an animal, the outer most layer of cells is called ectoderm, the inner endoderm and the middle as mesoderm. Since the term 'epi' refers to the outside (above) and 'hypo' referrs to the inside (below), the answer (c) is correct.

1. ULTRASTRUCTURE OF THE CELL

1. **Ultrastructure of the cell is understood with the help of**
   (a) a light microscope (b) a dissection microscope
   (c) an electron microscope (d) a powerful lens
2. **The term cell was coined by**
   (a) Robert Brown (b) Robert Hooke
   (c) Leeuwenhoek (d) none of the above
3. **The term protoplasm was coined by**
   (a) Johannes Purkinje (b) Mendel
   (c) Huxley (d) H.G.Khorana
4. **The famous cell theory was proposed by**
   (a) Watson and Crick (b) Darwin
   (c) Robert Hooke (d) Scheiden and Schwann
5. **According to the cell theory**
   (a) all the living organisms are made up of basic structural units called cells
   (b) all cells are living
   (c) the cells are responsible for reproduction
   (d) the cells gradually die
6. **A prokaryote is one which has**
   (a) a definite nucleus (b) no definite nucleus
   (c) no cell cycle (d) none of the above
7. **An eukaryote is one which has**
   (a) no definite nucleus (b) a definite nucleus
   (c) DNA only (d) a large nucleus
8. **A true nucleus is seen in**
   (a) bacteria (b) Mycoplasma (c) Spirogyra (d) virus
9. **An example for a prokaryotic organism is**
   (a) Mycoplasma (b) man (c) elephant (d) an insect
10. **Karyology is the study of**
    (a) nucleolus (b) nucleus
    (c) chromosomes (d) none of the above
11. **The nucleus was first discovered by**
    (a) Louis Pasteur (b) Leeuwenhoek
    (c) Robert Brown (d) Robert Hooke
12. **The presence of cell wall is an exclusive feature of**
    (a) an animal cell (b) a plant cell
    (c) a virus (d) none of the above
13. **Micelles are found in**
    (a) the cell membrane (b) cell wall (c) plasmodesmata (d) mycelium
14. **Cyclosis is**
    (a) the life cycle of an organism
    (b) streaming movement of the protoplasm
    (c) movement of the living organelle
    (d) flow of water into the cell

15. The power house of the cell is

(a) ribosome (b) endoplasmic reticulum
(c) chloroplast (d) mitochondrion

16. The plasma membrane is

(a) permeable (b) semi-permeable
(c) selectively semi-permeable (d) none of these

17. The plasma membrane is made up of

(a) lipids and proteins (b) lipids and polysaccharides
(c) proteins and fats (d) carbohydrates and fats

18. Pinocytosis is one of the functions of

(a) cell wall (b) plasma membrane (c) tonoplast (d) none of these

19. Ribosomes are the sites of

(a) respiration (b) photosynthesis
(c) protein synthesis (d) fat metabolism

19a. According to unit membrane theory

(a) a protein layer alternates with a lipid layer
(b) a lipid layer is found between two protein layers
(c) a protein layer is found between two lipid layers
(d) a protein layer is surrounded by a lipid layer

19b. A cystolith is chemically made up of

(a) an amino acid called cystine (b) protein
(c) calcium carbonate (d) magnesium sulphate

19c. A large number of ATP molecules are synthesised within

(a) endoplasmic reticulum (b) golgi complex
(c) ribosomes (d) mitochondria

19d. The needle like calcium oxalate crystals are called

(a) druses (b) cystoliths (c) rhomboidals (d) raphides

19e. The druses are

(a) star shaped (b) needle like (c) concentric (d) spherical

19f. A starch grain having a central hilum is called

(a) concentric (b) eccentric (c) pericentric (d) centric

19g. Which of the following statements is correct ?

(a) There are ten thousand Å in a micron
(b) There are one thousand Å in a micron
(c) There are one hundred microns in an Å
(d) There are ten Å in a micron

19h. Which of the following statements is correct ?

(a) There are ten microns in a millimeter
(b) There are 100 microns in a millimeter
(c) There are 1000 microns in a millimeter
(d) There are 1000 millimeters in a micron

20. Golgi apparatus was discovered by

(a) Mendel (b) Schwann (c) Camillo Golgi (d) Benda

21. Tonoplast is a membrane around

(a) a mitochondrion (b) a nucleus
(c) a vacuole (d) a cytoplasm

22. The plastids were discovered by

(a) Palade (b) Schimper (c) Brown (d) Benda

23. The coloured plastids are called as

(a) leucoplasts (b) chromoplasts
(c) chloroplasts (d) none of the above

24. The thylakoids are found in

(a) chloroplasts (b) ribosomes
(c) mitochondria (d) endoplasmic reticulum

25 .The quantasomes are found in

(a) rough endoplasmic reticulum (b) nuclear membrane
(c) chloroplasts (d) Golgi bodies

26. Cristae are found in

(a) dictyosomes (b) mitochondria
(c) lysosomes (d) none of the above

27. On the inner surface of the inner mitochondrial membrane.we find

(a) ribosomes (b) Racker's particles
(c) lipid molecules (d) microsomes

28. Golgi bodies also produce

(a) microsomes (b) lysosomes
(c) ribosomes (d) mitochondria

29. Nucleolus is found inside the

(a) cell (b) nucleus (c) nucleoli (d) dictyosome

30. Endoplasmic reticulum becomes rough when

(a) ribosomes are present on it
(b) lysosomes are present on it
(c) mitochondria are present on it
(d) quantasomes are present on it

31. Mitochondrion is

(a) an autonomous body
(b) a semi-autonomous organelle
(c) a totally dependent structure
(d) an organelle with its own nucleus

32. Ergastic substances in the cell are the

(a) living organelle
(b) nonliving inclusions
(c) vacuoles
(d) network of endoplasmic reticulum

33. Raphides are chemically made up of

(a) magnesium sulphate (b) calcium carbonate
(c) calcium oxalate (d) calcium and magnesium carbonates

34. The vacuole of a plant cell contains

(a) water and dissolved chemicals (b) tonoplast
(c) air (d) protoplasm

35. The protoplasm was defined as 'physical basis of life' by

(a) Purkinje (b) Palade (c) Huxley (d) Altamann

36. Leucoplast is a

(a) photosynthetic plastid (b) storage plastid
(c) chemosynthetic plastid (d) none of the above

37. The animal cell differs from a plant cell in

(a) having a spherical shape (b) lacking a cell wall
(c) having a vacuole (d) having a membrane

38. Lysosomes contain

(a) respiratory enzymes (b) hydrolytic enzymes
(c) proteins and fats (d) only membranes

39 The protoplasmic connections from one cell to the other ar established through

(a) membrane (b) stomata
(c) plasmodesmata (d) lenticels

40. Cisternae ,tubules and the vesicles are the components of

(a) endoplasmic reticulum (b) centrosome
(c) mitochondria (d) golgi complex

41. An incipient nucleus has

(a) a nuclear membrane and a nucleus
(b) only nucleoplasm without the nuclear envelope
(c) only D N A
(d) both nucleus and D N A

42. In a fluid mosaic model of the plasma membrane.

(a) the hydrophilic tails of lipid molecules are facing the surface
(b) the hydrophobic heads of the lipid molecules are facing the surface
(c) both the head and tail ends of lipid molecules are completely inside
(d) there are no lipid molecules at all

43. The study of the nucleus is called as

(a) cytology (b) karyology
(c) cytogenetics (d) none of the above

44. Protoplast is

(a) the cell minus the cell wall
(b) the cell minus the nucleus
(c) the cell minus the membrane
(d) the cell minus the cytoplasm

45. The pits are formed due to

(a) secondary wall (b) primary wall
(c) membrane (d) pressure on cell wall

2.CHROMOSOMES AND NUCLEIC ACIDS

1. In an eukaryotic cell the chromosomes are found inside the

(a)nucleolus (b) nucleus (c) mitochondrion (d) chloroplast

2. Chromosomes were first discovered by

(a) Balbiani (b) Hofmeister (c) Flemming (d) Palade

3. The chromosomes are chemically made up of

(a) lipids,proteins and carbohydrates
(b) all types of nucleic acids
(c) D N A,histones and nonhistones
(d) D N A and R N A

4. Centromere is

(a) a mere central part of the chromosome
(b) the dilated part of the chromosome
(c) nonstainable region of the chromosome
(d) not a part of the chromosome

5. In a metacentric chromosome there are

(a) two equal arms (b) two unequal arms
(c) secondary constrictions (d) no centromeres at all

6. A sat chromosome has

(a) a secondary constriction only
(b) both primary and secondary constrictions
(c) a primary constriction only
(d) no constrictions at all

7. The two giant chrmosomes are called as

(a) polytene and submetacentric
(b) lampbrush and metacentric
(c) polytene and lampbrush
(d) autosomes and allosomes

8. Allosomes are

(a) the sex chromosomes
(b) somatic chromosomes
(c) mixture of metacentric and submetacentric chromosomes
(d) giant chromosomes

9. Autosomes are

(a) automatically dividing chromosomes
(b) self dependent chromosomes
(c) somatic chromosomes
(d) sex chromosomes

10. X and Y are the

(a) vegetative chromosomes (b) giant chromosomes
(c) sex chromsomes (c) unknown chromosomes

11. Polytene chromosome was discovered by

(a) Mendel (b) Flemming (c) Balbiani (c) Dobzonsky

12. Lampbrush chromosome was first discovered by

(a) Ruckert (b) Balbiani (c) Robert Brown (d) Camillo Golg

13. Beaded appearance of the chromosomes during leptotene is due to the presence of

(a) centromeres (b) chromomeres
(c) nucleotides (d) chromocentres

14. It is possible to know the number of chromosomes during

(a) interphase (b) telophase
(c) metaphase (d) none of the phases

15. A gamete will have a

(a) diploid number of chromosomes
(b)haploid number of chromosomes
(c) haplodiploid number of chromosomes
(d) triploid number of chromosomes

16. Genes are located in the

(a) nucleolus (b) chromosomes
(c) nuclear membrane (d) nucleoplasm

17. Chromosomes are capable of undergoing

(a) self duplication (b) degradation
(c)upgradation (d) none of the above

18. A genome is the total number of genes that are located on a

(a) diploid set of chromosomes
(b) haploid set of chromosomes
(c) giant chromosomes
(d) polyploid set of chromosomes

19. In a polyploid nucleus, we find

(a) multiples of the same chromosome
(b) only one genome
(c) multiple genomes
(d) none of the above

20. The unit of heredity is called a

(a) chromosome (b) gene
(c) chromomere (d) hereditary unit

21. A gene is chemically defined as a

(a) segment of D N A that can synthesise a sensible protein
(b) unit of heredity
(c) part of chromosome
(d) none of the above

22. Polytene chromosomes are found in

(a) oocytes of amphibians
(b) salivary gland cells of Drosophila
(c) brain cells of man
(d) none of the above

23. Giant chromosomes are found in

(a) some insects and amphibians
(b) elephants and horses
(c) giants and men
(d) none of the above

24. Lampbrush chromosomes are found in

(a) salivary gland cells of Drosophila
(b) oocytes of the amphibians
(c) reproductive cells of lambs
(d) none of the above

25. Lampbrush chromosomes are so called because

(a)they are used to brush the lamps
(b) they are brushed and studied under the lamps
(c) they are like brushes used to clean the lamps
(d) they are studied only near the lamp

26. The chromocentre is found in

(a) polycentric chromosome (b) metacentric chromosome
(c) polytene chromosome (d) centre of a chromosome

27. Polyploids are

(a) fertile (b) sterile (c) semifertile (d) highly fertile

28. The rice and wheat we eat are

(a) diploids (b) triploids (c) hexaploids (d) decaploids

29. In a hexaploid nucleus, there are

(a) four haploid sets of chromosomes
(b) five haploid sets of chromosomes
(c) six haploid sets of chromosomes
(d) one haploid set of chromosomes

30. A gene which is responsible for mutation is called a

(a) muton (b) recon
(c) operon (d) none of the above

31. The term 'pangene' was proposed by

(a) De Vries (b) Darwin (c) Mendel (d) Lamarck

32. The nucleic acids were discovered by

(a) Watson and Crick (b) Kossel (c) Levene (d) Miescher

33. The two nucleic acids are

(a) D N A and HCl (b) R N A and H_2SO_4
(c) R N A and D N A (d) none of the above

34. The nucleic acids contain the

(a) pentose sugar (b) hexose sugar
(c) sedoheptulose sugar (d) tetrose sugar

35. The monomeric units present in a nucleic acid are

(a) nucleosides (b) nucleotides
(c) pentose sugars (d) nitrogen bases

36. The double helix model of D N A was proposed by

(a) Kornberg (b) Nirenberg
(c) Watson and Crick (d) none of the above

37. A nucleoside is a combination of

(a) a pentose sugar and a phosphate group
(b) a pentose sugar and a nitrogen base
(c) a nitrogen base and a phosphate group
(d) a pentose sugar, a nitrogen base and a phosphate group

38. Which of the following statements is correct?

(a) The nucleotide is made up of a pentose sugar, a nitrogen base and a phosphate group
(b) The nucleotide is made up of a nucleoside and a nitrogen base
(c) The nucleotide is made up of a nucleoside and a pentose sugar
(d) The nucleotide is made up of a pentose sugar and a phosphate group

39. The D N A molecule has

(a) a polynucleotide chain
(b) two peptide chains
(c) two polynucleotide chains
(d) a polypeptide chain

40 The two polynucleotide chains in D N A are

(a) parallel (b) antiparallel
(c) perpendicular (d) in concentric rings

41. The two polynucleotide chains in D N A are held together by

(a) nitrogen bonds (b) hydrogen bonds
(c) oxygen bonds (d) peptide bonds

42. R N A contains

(a) ribose sugar (b) deoxyribose sugar
(c) hexose sugar (d) dextrose

43. D N A contains

(a) hexose sugar (b) dextrose
(c) deoxyribose sugar (d) none of the above

44. Ribose nucleic acid is a

(a) single chain of many nucleotides
(b) double polynucleotide chains
(c) single chain of nucleotides and proteis
(d) double helical structure

45. The nitrogen base found in R N A but not in D N A is

(a) guanine (b) adenine (c) uracil (d) thymine

46. In a D N A molecule

(a) adenine pairs with guanine
(b) guanine pairs with thymine
(c) thymine pairs with adenine
(d) none of the above

47. Smallest number of nucleotides is found in

(a) D N A (b) r-R N A (c) t-R N A (d) m-R N A

48. In a D N A molecule

(a) guanine pairs with cytosine
(b) thymine pairs with guanine
(c) adenine pairs with guanine

(d) cytosine pairs with thymine

49. t-R N A transfers the

(a) protein molecule (b) nitrogen base
(c) amino acid (d) transfer R N A

50. D N A functions as

(a) a template for m-R N A production
(b) an enzyme
(c) a protein precursor
(d) none of the above

51. The replication of D N A is said to be of

(a) a splitting type
(b) semiconservative type
(c) a transversely splitting type
(d) a conservative type

52. The distance between two nucleotides, in a D N A molecule is

(a) 4.3 Å (b) 34 Å (c) 3.4 Å (d) 20 Å

53. For the proposal of double helix model of D N A, the Nobel prize was awarded to

(a) Kossel (b) H.G. Khorana
(c) Watson and Crick (d) Chargaff

54. The extranuclear D N A is found in

(a) chloroplast (b) ribosomes
(c) endoplasmic reticulum (d) nucleus

55. In every turn of D N A helix there are

(a) 34 nucleotides (b) 10 nucleotides
(c) 20 nucleotides (d) 12 nucleotides

56. The length of one turn in a D N A helix is

(a) 3.4 mm (b) 34 Å (c) 10 Å (d) 43 Å

57. The term KARYOTYPE is referred to

(a) the appearance of allosomes
(b) the nature of the nucleus
(c) the appearance of somatic chromosomes at metaphase of mitosis
(d) the group of individuals with a similar nuclear composition

58. The diploid number of chromosomes in Homo sapiens is

(a) 44 (b) 46 (c) 50 (d) 23

59. The haploid number of chromosomes in Allium cepa is

(a) 8 (b) 16 (c) 4 (d) 32

60. The diploid number of chromosomes in Ascaris megalocephala is

(a) 10 (b) 20 (c) 2 (d) 1

61. Nobel prize was awarded to H. G. Khorana for

(a) discovery of DNA
(b) artificial synthesis of genes
(c) his work on RNA
(d) none of the above

3.GENETIC CODE AND PROTEIN SYNTHESIS

1. **The building blocks of protein molecules are**
   (a) nucleotides (b) amino acids
   (c) nitrogen bases (d) hexose sugars
2. **The gene theory was proposed by**
   (a) Mendel (b) Watson (c) Morgan (d) Johanson
3. **The sites of protein synthesis are**
   (a) mitochondria (b) endoplasmic reticulum
   (c) ribosomes (d) lysosomes
4. **Transcription means**
   (a) synthesis of a protein
   (b) synthesis of m-R N A by D N A
   (c) synthesis of enzymes necessary for protein synthesis
   (d) transferance of m-R N A
5. **Protein synthesis is controlled by D N A through**
   (a) an enzyme (b) t-R N A
   (c) m-R N A (d) ribosomal R N A
6. **The number of t-R N A is equivalent to**
   (a) the number of m-R N A
   (b) the number of protein molecules
   (c) the number of D N A molecules
   (d) the number of amino acids
7. **The messenger R N A receives the genetic codes from**
   (a) transfer R N A (b) D N A template
   (c) nitrogen base (d) none of the above
8. **A triplet codon means**
   (a) the presence of only three bases in an m-R N A
   (b) a sequence of three nitrogen bases on m-R N A
   (c) a sequence of three nitrogen bases in a t-R N A
   (d) a sequence of three bases in r-R N A
9. **The initiator codon during protein synthesis is**
   (a) U U U (b) A U G (c) G U C (d) C U A
10. **Amino acid identifying site is found in**
    (a) m-R N A (b) t-R N A
    (c) r-R N A (d) a protein molecule
11. **A group of three nitrogen bases in t-R N A which can recognise the code on m-R N A is called**
    (a) a genetic code (b) a nodoc
    (c) a triplet codon (d) a doublet codon
12. **The triplet codons are located on**
    (a) t-R N A (b) r-R N A
    (c) m-R N A (d) genetic R N A

13. If the base sequence in a D N A template is A A G T C A T G C, the complementary bases on m-R N A is

(a) T T C A G T A C G (b) U U C A G U A C G
(c) U U A G G U G G C (d) T T C A G T A C G

14. Which of the following is a terminator codon?

(a) U G A (b) A C U (c) U G C (d) U G G

15. Codons are called universal when

(a) they are called so throughout the world
(b) the same codon codes for many amino acids
(c) the same codon codes for the same amino acid in any given organism
(d) the codons are labelled as universal

16. The redundant codon means

(a) a single triplet codon codes for many amino acids
(b) the degenerating of the codons during protein synthesis
(c) more than one codon exists for each amino acid
(d) the reduction of a triplet codon during protein synthesis

17. Nonsense codons means

(a) the codons that are dull
(b) the codons that are mischievous
(c) the codons that never code for any amino acid
(d) none of the above

18. The length of the protein molecule is more or less equivalent to the length of

(a) D N A molecule (b) t-R N A molecule
(c) m-R N A molecule (d) none of the above

19. The peptide bonds connect the

(a) nucleotides
(b) protein molecules
(c) m-R N A to the protein chain
(d) amino acids to form a chain

20. Proteins are very important macro-molecules for cellular activity because

(a) they provide nourishment to the organisms
(b) they are giant molecules
(c) the enzymes responsible for metabolic activity are proteins
(d) they bring about growth

21. The information for protein synthesis is transferred from D N A to m-R N A in the form of

(a) base pairs (b) genes
(c) triplet codons (d) none of the above

22. The function of t-R N A is to transfer

(a) amino acids to ribosomal site
(b) proteins to the ribosomal site
(c) m-R N A to the cytoplasm
(d) pentose sugar in the cytoplasm

23. The translation process leads to

(a) the formation of m-R N A
(b) the formation of a polypeptide chain
(c) the formation of a polynucleotide chain
(d) the formation ofa polysaccharide

24. A ribosome is composed of

(a) two hemispherical units of equal size
(b) two hemispherical units of unequal size
(c) a single large unit
(d) some granular units

25. The 70_S ribosome in bacteria has two sub units of

(a) 60_S and 40_S (b) 50_S and 20_S
(c) 50_S and 30_S (d) 100_S and 30_S

4. CELL DIVISION

1. The cell division includes

(a) karyokinesis
(b) cytokinesis
(c) karyokinesis and cytokinesis
(d) none of the above

2. Direct cell division is also called as

(a) mitosis (b) meiosis (c) amitosis (d) budding

3. Meiosis takes place in

(a) somatic cells (b) reproductive cells
(c) parenchyma cells (d) meristematic cells

4. Mitotic cell division is also called as

(a) direct cell division
(b) indirect cell division
(c) reduction cell division
(d) fission type

5. The parental chromosome number in the daughter cells is maintained during

(a) meiosis (b) mitosis and meiosis
(c) mitosis (d) none of the above

6. The parental chromosome number is reduced to half the numbe in daughter cells during

(a) mitosis (b) meiosis
(c) amitosis (d) budding

7. The cancer tumor is formed due to rapid

(a) meiotic cell division
(b) amitotic cell division
(c) mitotic cell division
(d) none of the above

8. Fission and budding are common among

(a) yeast cells (b) muscular cells
(c) meristematic cells (d) nerve cells

9. The growth of a multi-cellular organism is due to

(a) amitosis (b) meiosis
(c) mitosis (d) karyokinesis

10. The interphase is

(a) a dormant phase of a cell
(b) resting stage without any metabolic activity
(c) a phase in between two cell division where active protein synthesis and D N A duplication take place
(d) not at all found in the cell cycle

11. The chromosomes are arranged in an equatorial plane during

(a) telophase (b) anaphase
(c) metaphase (d) interphase

12. Spindle apparatus in an animal cell is due to

(a) the poles of the cell (b) centrioles
(c) the nucleus (d) endoplasmic reticulum

13. The number of daughter cells formed when a cell undergoes meiosis is

(a) two (b) eight (c) four (d) many

14. In higher animals the meiosis takes place during

(a) gamete formation (b) gamete fusion
(c) zygote formation (d) none of the above

15. Which phase of meiosis is of long duration?

(a) Prophase II (b) Metaphase II
(c) Prophase I (d) Telophase II

16. The chromosomes become clearly visible during

(a) telophase (b) prophase
(c) interphase (d) metaphase

17. The pairing of chromosomes is seen during

(a) meiosis (b) mitosis (c) amitosis (d) budding

18. The synapsis takes place during

(a) diakinesis (b) zygotene
(c) diplotene (d) leptotene

19. The sequence of sub-stages during prophase I of meiosis is

(a) leptotene-pachytene-diakinesis-diplotene-zygotene
(b) zygotene-leptotene-pachytene-diplotene-diakinesis
(c) leptotene-zygotene-pachytene-diplotene-diakinesis
(d) pachytene-diplotene-diakinesis-zygotene-leptotene

20. Exchange of genetic material takes place by

(a) chiasmata formation
(b) stimulus
(c) twining around each other
(d) none of the above

21. Meiosis II is similar to

(a) amitosis (b) mitosis
(c) cytokinesis (d) fission

22. The phragmoplast is formed in

(a) an animal cell (b) a bacterial cell
(c) a plant cell (d) a Mycoplasma cell

23. D N A is duplicated during

(a) prophase (b) metaphase
(c)interphase (d) anaphase

24. The cell division is qualitatively and quantitatively equal when

(a) amitosis takes place
(b) fission takes place
(c) meiosis takes place
(d) mitosis takes place

25. The chromosomes move towards the poles during

(a) telophase (b) metaphase
(c) anaphase (d) prophase

26. Which of the following statements is correct?

(a) Meiosis occurs by chance
(b) Meiosis occurs in rapidly dividing somatic cells
(c) Meiosis occurs during the formation of gametes and spores
(d) Meiosis occurs to maintain the original parental chromosome numb

27. Which of the following statements is correct?

(a) Karyokinesis is followed by cytokinesis
(b) Karyokinesis follows the cytokinesis
(c) Karyokinesis and cytokinesis take place simultaneously
(d) Karyokinesis is never followed by cytokinesis

28. Cloning of cells means

(a) producing many cells with various genetic complements
(b) producing a group of cells with similar genetic complements in all
(c) trimming the cells to a required size
(d) none of the above

29. The centromere is divided during

(a) metaphase (b) anaphase
(c) prophase (d) interphase

30. Amitosis is very common among

(a) elephants (b) angiosperms
(c) lower organisms (d) pteridophytes

5. HEREDITY

1. **Heredity is defined as**

   (a) the variations that occur among living organisms
   (b) the transmission of characters from parents to offspring
   (c) the distribution of parental property to the offsprings
   (d) the study of genes

2. **The unit of heredity is called**

   (a) hereditary unit (b) gene (c) centromere (d) chromomere

3. **A gene is chemically composed of**

   (a) polysaccharides (b) deoxyribose nucleic acid
   (c) an amino acid (d) none of these

4. **Variations are**

   (a) the differences among individuals derived from the same parent
   (b) changes in DNA contents of a cell
   (c) varients of genes (d) none of these

5. **The father of modern genetics is**

   (a) Darwin (b) Lamarck (c) Mendel (d) De Vries

6. **Exchange of genes between two cells takes place during**

   (a) fertilisation (b) mitosis (c) meiosis (d) fission

7. **The alleles are**

   (a) genes present in allosomes
   (b) a pair of genes governing a specific character such as tallness or dwarfness
   (c) the genes in many forms
   (d) none of the above

8. **When a cross is made between two parents in respect of one character, it is called a**

   (a) monohybrid (b) dihybrid (c) trihybrid (d) none of these

9. **In a monohybrid cross, we get the genotypic ratio as**

   (a) 1 : 1 : 2 (b) 1 : 2 : 1 (c) 2 : 1 : 1 (d) none of these

10. **A hybrid is defined as a**

    (a) plant resulting from a cross between two parents
    (b) plant resulting from a mutation
    (c) high yielding plant
    (d) plant which produces good fruits

11. **In monohybrid cross we get a phenotypic ratio as**

    (a) 1 : 3 (b) 1 : 2 : 1 (c) 3 : 1 (d) 4 : 1

12. **When a pure tall pea plant is crossed with a pure dwarf pea plant the resulting plants in F_1 generation are**

    (a) tall and dwarf in the ratio 1 : 1 (b) all tall
    (c) all dwarf (d) none of these

13. **When tall plants of F_1 generation are selfed we get tall and dwarf plants in the ratio**

    (a) 1 : 1 (b) 1 : 3 (c) 3 : 1 (d) 2 : 2

14. **Externally visible character is called as**

    (a) phenotype (b) genotype (c) heterozygous (d) homozygous

15. **The theory of mutation was proposed by**
(a) Mendel (b) Lamarck (c) De Vries (d) Dobzonsky

16. **John Gregor Mendel conducted genetic experiments on**
(a) bean plants (b) maize plants (c) pea plants (d) wheat plants

17. **In pea plants , the gene for tallness is**
(a) recessive (b) dominant (c) sex linked (d) mutated

18. **A test cross is conducted after monohybrid cross to find out**
(a) an unknown dominant character
(b) the possibility of a hybrid production
(c) whether the cross is alright
(d) none of the above

19. **In F_2 generation of a dihybrid cross in pea plant , tall red tall white , dwarf red and dwarf white plants are obtained in the ratio**
(a) 3 : 9 : 3 : 1 (b) 9 :1 : 3 : 3 (c) 9 : 3 : 3 : 1 (d) 1 : 9 : 3 : 3

20. **In a pea plant , the gene for red colour is**
(a) recessive to white (b) dominant over white
(c) equally dominant as white (d) none of these

21. **Seggregation of characters takes place during**
(a) fusion of gametes (b) formation of gametes
(c) division of zygote (d) none of these

22. **When two organisms are similar phenotypically but different genotypically , they are said to be**
(a) homozygous (b) heterozygous (c) phenotypes (d) genotypes

23. **When t t is crossed with hybrid T t , the progeny shows the ratio of tall and dwarf plant as**
(a) 2 : 1 (b) 1 : 2 : 1 (c) 1 : 1 (d) 1 : 2

24. **When F_1 hybrids T t R r are crossed with pure recessive t t r r the ratio of seggregation is**
(a) 1 : 2 : 1 : 1 (b) 1 : 1 : 1 : 1 (c) 2 : 1 : 1 : 1 (d) 1 : 1 : 2 : 1

25. **According to the law of seggregation ,**
(a) a pair of genes express phenotypically
(b) a pair of genes seggregate during gamete formation
(c) a pair of genes remain in the same gamete
(d) a pair of genes move together always

26. **The individuals with similar genes in a pair are said to be**
(a) heterozygous (b) homozygous (c) heterogenous (d) homogen

27. **Mutation can be induced by**
(a) Exposing the plants to X-rays (b) grafting
(c) spraying nitric acid (d) exposing the plant to darkness

28. **Mutation was first induced in Drosophila by**
(a) De Vries (b) Morgan (c) Muller (d) Dobzonsky

29. **The term ' mutation ' was coined by**
(a) Morgan (b) De Vries (c) Lamarck (d) Mendel

30. **The blood groups were first discovered by**
(a) Harvey (b) Karl Landesteiner (c) Morgan (d) Muller

31. The inheritence of blood group is a classic example of

(a) mutation (b) multiple allelism
(c) sex linkage (d) incomplete dominance

32. Multiple allelism is also termed as

(a) multimutation (b) gene multiplication
(c) gene polymorphism (d) none of these

33. Antigens are found

(a) in the plasma of blood (b) on the membrane of RBC
(c) in white blood corpuscles (d) in the heart

34. Antigen is a type of protein called as

(a) agglutinin (b) agglutinogen (c) albumin (d) none of these

35. Antibody is found in

(a) red blood corpuscles (b) white blood corpuscles
(c) plasma of blood (d) none of these

36. Antibody is a type of protein called as

(a) agglutinogen (b) agglutinin (c) albumin (d) none of these

37. A person with blood group ' A ' has

(a) antibody a (b) antibody b (c) antibodies a and b (d) no antibody

38. A person with blood group ' AB ' has

(a) antibodies a and b (b) no antibody (c) antibody a (d) antibody b

39. In blood transfusion the universal blood donor is a person with

(a) blood group AB (b) blood group O
(c) blood group A (d) blood group B

40. The universal blood acceptor is a person with

(a) blood group O (b) blood group AB
(c) blood group B (d) blood group A

41. The blood group O is universal donor because

(a) it has antigen A (b) it has no antigen
(c) it has antigen B (d) it has both antigens A and B

42. The blood group AB is the universal acceptor because

(a) it has no antibodies (b) it has antibodies a and b
(c) it has antibody a (d) it has antibody b

43. The person with blood group O has

(a) antigen A (b) antigen B (c) no antigen (d) antigens A and B

6. WATER RELATIONS

1. **In a living system , water**
   (a) maintains the pH (b) is the major solvent
   (c) forms its own medium (d) none of these
2. **The turgid condition of the cell is due to**
   (a) the loss of water (b) the entry of water
   (c) plasmolysis (d) none of these
3. **The major component of protoplast is**
   (a) the carbohydrate (b) the protein (c) water (d) oils and fats
4. **When the cell becomes turgid , it developes**
   (a) wall pressure (b) osmotic pressure
   (c) turgor pressure (d) diffusion pressure
5. **The turgor pressure is applied on the**
   (a) plasma membrane (b) protoplasm (c) cell wall (d) none of these
6. **Protoplasm exhibits**
   (a) alkalinity (b) acidity (c) colloidal nature (d) none of these
7. **There is an involvement of a semi-permeable membrane in**
   (a) diffusion (b) osmosis (c) absorption (d) adsorption
8. **The size of the colloidal particles varies from**
   (a) 1 μ to 10 μ (b) 0.01 Å to 100 Å (c) 0.001μ to 0.1μ (d) .01μ to 1μ
9. **Osmosis involves**
   (a) the flow of solute molecules (b) the flow of solvent molecules
   (c) the flow of solute and solvent molecules (d) none of these
10. **The process of diffusion is concerned with**
    (a) solvent molecules (b) solute molecules
    (c) gas molecules (d) solvent,solute and gas molecules
11. **When a scent bottle is opened in a room , odour is spread in all directions because of**
    (a) osmosis (b) diffusion (c) wind (d) none of these
12. **A solution of higher concentration has**
    (a) more of solvent and less of solute molecules
    (b) more of solute and less of solvent molecules
    (c) solute and solvent molecules in equal proportion
    (d) none of the above
13. **When a few crystals of potassium permanganate are put in a beaker of water, a homogeneous pink solution is formed due to**
    (a) osmosis (b) diffusion
    (c) purification of water (d) dissolution
14. **During osmosis, solvent molecules move through the semi-permeable membrane**
    (a) from the region of higher concentration to lower concentration
    (b) from the region of lower concentration to higher concentration
    (c) from the region of lower concentration to higher concentration and then move back
    (d) none of the above
15. **When a dry grape is put in water it swells due to**
    (a) exosmosis (b) endosmosis (c) plasmolysis (d) none of these

16. When a few fresh grapes are put in a strong salt solution, they shrink due to

(a) exosmosis (b) endosmosis (c) deplasmolysis (d) none of these

17. Due to plasmolysis, the plant cell becomes

(a) turgid (b) flaccid (c) solid (d) normal

18. A plasmolysed cell can regain turgidity when it is immediately transferred to

(a) a water medium (b) an acidic medium
(c) an alkaline medium (d) a salt medium

19. Which of the following is correct?

(a) DPD = TP – OP (b) DPD = TP – WP
(c) DPD = OP – TP (d) DPD = OP – WP

20. When turgor pressure is zero, then

(a) DPD = OP (b) DPD = TP
(c) DPD = WP (d) none of these

21. The seeds swell in water due to

(a) osmosis (b) diffusion (c) imbibition (d) absorption

22. An example of semi-permeable membrane is

(a) cell wall (b) plasma membrane (c) middle lamella (d) none of these

23. When a cell shrinks in a solution, the solution must be

(a) isotonic (b) hypotonic (c) hypertonic (d) none of these

24. If a cell becomes turgid when placed in a solution, the solution should be

(a) hypertonic (b) hypotonic (c) isotonic (d) saturated

25. Adsorption is

(a) a physical phenomenon (b) a surface phenomenon
(c) an adsorption phenomenon (d) none of these

26. The cell to cell movement of water is determined by

(a) osmotic pressure (b) turgor pressure
(c) diffusion pressure deficit (d) cell wall pressure

27. The absorption of water is brought about by

(a) shoot system (b) root system (c) foliage (d) both root and the shoot systems

28. Mineral salts are absorbed in the form of

(a) ions (b) molecules (c) crystals (d) none of these

29. The actual part of the root system that absorbs water is

(a) lateral root (b) root hairs (c) primary root (d) root tip

30. The roots absorb water when

(a) the concentration of cell sap is more
(b) the concentration of cell sap is less
(c) the concentration of cell sap is equal to that of the external medium (d) they need water

31. Ascent of sap is

(a) the translocation of solutes
(b) the upward movement of water and mineral salts
(c) the downward movement of water (d) none of these

32. The path of ascent of sap is the

(a) cortex (b) phloem (c) xylem (d) sclerenchyma

33. During active absorption, water

(a) enters the root hairs enmasse(b) is absorbed by the root hairs
(c) enters due to external force (d) none of these

34. During passive absorption, water

(a) is absorbed by the activity of the root hairs
(b) enters the root hairs due to an external force
(c) enters the root hairs due to osmosis
(d) enters the root hairs due to suction force created by transpiration

35. The root pressure is not developed among

(a) angiosperms (b) gymnosperms
(c) mesophyta (d) hydrophytes

36. Relative humidity is measured by

(a) anemometer (b) hygrometer (c) calorimeter (d) thermometer

37. The wind velocity is measured by

(a) hygrometer (b) anemometer (c) spherometer (d) colorimeter

38. Transpiration is

(a) the evapoaration of water from the plant body
(b) the exudation of water from the plant body
(c) the entry of water into the plant body (d) all the above

39. The process of transpiration indirectly helps

(a) the absorption of carbon dioxide
(b) the upward movement of the sap
(c) the stomatal movements (d) all the above

40. The rate of transpiration is measured by

(a) photometer (b) potorneter (c) hygrometer (d) anemometer

41. A stomatal apparatus consists of

(a) the stoma, two guard cells and the subsidiary cells
(b) the stoma and two guard cells
(c) the stoma, two guard cells and the epidermal cells (d) all the above

42. The stomatal frequency is nothing but

(a) the number of stomata present in a square cm of the leaf surface
(b) the number of stomata present in a square mm of the leaf surface
(c) the number of stomata present on the lower surface of the leaf
(d) the number of stomata present on the upper surface of the leaf

43. Sunken stomata are meant to

(a) promote transpiration (b) check transpiration
(c) enhance the transpiration rate (d) all these

44. Guard cell differs from other epidermal cells in having

(a) nucleus (b) large no of mitochondria
(c) chloroplasts (d) dense protoplasm

45. Sir J.C. Bose proposed

(a) the root pressure theory (b) the cohesion-tension theory
(c) vital theory (d) moss flow hypothesis

46. Ganongs potometer is an apparatus used

(a) to demonstrate transpiration
(b) to measure the rate of transpiration

(c) to measure the rate of guttation
(d) all the above

47. The rate of transipiration is high at

(a) high temperature (b) high humidity
(c) low temperature (d) night

48. When the wind velocity is more, the rate of transpiration is

(a) less (b) more (c) intermediate (d) nil

49. More of water is lost by

(a) cuticular transpiration (b) stomatal transpiration
(c) lenticular transpiration (d) guttation

50. When the stomata are present only on the lower surface of the leaf, the leaf is said to be

(a) epistomatic (b) hypostomatic
(c) amphistomatic (d) none of these

51. An isobilateral leaf is

(a) hypostomatic (b) amphistomatic
(c) epistomatic (d) stomata-less

52. Stomata open during day time because

(a) sugar is converted into starch during day
(b) starch is converted into sugar during day
(c) of continuous respiration
(d) none of these

53. Opening and closing of stoma is directly related to

(a) turgidity of guard cells (b) size of the guard cells
(c) number of guard cells (d) none of these

54. When the guard cells become flaccid, the stoma

(a) opens (b) closes (c) collapses (d) none of these

55. When the guard cells attain turgidity,

(a) the stoma closes (b) the stoma opens
(c) the stoma suffers a physical damage (d) the stoma disintegrates

56. The stoma close at night because of

(a) the conversion of sugar into starch at night
(b) the conversion of starch into sugar at night
(c) entry of more water into guard cells at night
(d) there is no light at night

57. Even at night, the stoma open in presence of

(a) sodium ions (b) potassium ions (c) calcium ions (d) hydrogen ions

58. The accumulation of CO_2 in the guard cells brings about

(a) the closure of stomata (b) the opening of stomata
(c) toxic effect on the guard cells (d) stoppage of respiration

59. When the pH of the guard cells falls

(a) the stoma closes (b) the stoma opens
(c) the guard cells become turgid (d) none of the above

60. The sugars are osmotically

(a) inactive (b) active (c) inert (d) all the above

61. The presently accepted theory of ascent of sap is

(a) the theory of capillarity (b) imbibition theory

(c) cohesion-tension theory (d) root pressure theory

62. The cohesion-tension theory was proposed by

(a) Steward (b) Ganong (c) Dixon and Jolly (d) Munch

63. DPD means

(a) Dairy Production and Distribution
(b) Daily Photosynthetic Demands
(c) Diffusion Pressure Deficit
(d) none of the above

64. The oozing up of water at the margins of some leaves is a process called

(a) hydathode (b) guttation (c) exudation (d) all these

65. Guttation takes place through

(a) hydrathodes (b) hydathodes (c) stomata (d) lenticels

66. The guttated water differs from the transpired water in

(a) being in pure state (b) having salts dissolved in it
(c) being in a gaseous state (d) all these

67. Water stomata help in the process of

(a) transpiration (b) respiration
(c) guttation (d) photosynthesis

68. The absorption of water by plants is

(a) independent of absorption of solutes
(b) dependent on the absorption of solutes
(c) mutually dependent processes
(d) all the above

69. When a bit of gum is put in water, it swells due to

(a) absorption (b) imbibition (c) diffusion (d) osmosis

70. The process of osmosis ceases when

(a) the solutions become isotonic
(b) there is excess of temperature
(c) there is high humidity
(d) all the above

71. The force that causes the entry of water into the cell is

(a) osmotic pressure (b) diffusion pressure
(c) diffusion pressure deficit (d) external pressure

72. The xerophytic adaptations like sunken stomata, thick cuticle are meant

(a) to promote transpiration (b) to check the rate of respiration
(c) to check photosynthesis (d) for all these

73. The wilting of plants is also due to

(a) high rate of respiration (b) high rate of photosynthesis
(c) excessive transpiration (d) ascent of water

74. Curtis in 1926 regarded transpiration as

(a) an unnecessary process
(b) an essential physiological process
(c) a necessary evil
(d) an unnecessary evil

75. According to Godlewski's theory, the upward movement of water is due to

(a) transpiration pull
(b) root pressure
(c) pumping activity of xylem parenchyma cells
(d) rhythmic contraction of xylem vessels

76. "The pulsatory activity of inner corticle cells is responsible for upward movement of water". This was proposed by

(a) Strassburger (b) Godlewski (c) J.C. Bose (d) Ganong

77. According to capillary force theory to explain upward movement of water, the capillaries in the plant body are the

(a) sieve tubes (b) sclernchyma fibres
(c) xylem vessels and tracheids (d) parenchyma cells

78. Translocation of organic solutes involves

(a) the movement of food molecules upwards in the plant body
(b) the downward movement of food molecules in the plant body
(c) radial movement of food molecules in the plant body
(d) all the above

79. Translocation of food molecules is

(a) unidirectional (b) bidirectional (c) multidirectional (d) all these

80. The translocation mechanism was demonstrated through

(a) mass flow theory (b) theory of translocation
(c) Dixon and Joly's theory (d) none of these

81. The translocation of solutes takes place from

(a) root system towards the foliage
(b) the foliage towards root system
(c) the soil into the root system
(d) the root into the soil

82. The mass flow hypothesis was proposed by

(a) Steward (b) Ganong (c) Munch (d) Strassburger

83. The metabolic energy is used during

(a) passive absorption of minerals
(b) active absorption of minerals
(c) diffusion of minerals (d) all these

84. The ion carriers are present in the

(a) cytoplasm of the root hair cell (b) cell wall of the root hair cell
(c) membrane of the root hair cell (d) none of these

85. Cytochrome pump hypothesis was proposed by

(a) Bennet (b) Lundegardh (c) Munch (d) none of these

86. The ion carrier complex is formed in the

(a) cytoplasm of the root hair cell
(b) cell wall of the root hair cell
(c) membrane of the root hair cell
(d) none of the above

87. Water from the cortex enters the stele through

(a) all endodermal cells (b) casparian thickenings
(c) passage cells (d) only pericyclis cells

88. Water from the cortex enters the stele through passage cells because they lack

(a) cell wall (b) membrane (c) casparian thickening (d) protoplasm

89. The position of passage cell in the endodermis is

(a) opposite to the phloem (b) opposite to the protoxylem
(c) between the xylem and the phloem (d) all the above

90. The ascent of sap can be observed by using coloured water in balsam plant because

(a) the stem of the plant is thick
(b) the stem of the plant is semi-transparent
(c) the stem of the plant is coloured
(d) the stem of the plant is opaque

7. PHOTOSYNTHESIS

1. Photosynthesis is a

(a) light sensitised photochemical reduction oxidation process
(b) reduction oxidation process
(c) dye sensitised photochemical reduction – oxidation process
(d) food manufacturing process

2. The person who discovered oxygen is given out by green plants was

(a) De Saussure (b) Senebier (c) Joseph Priestly (d) Calvin

3. Dutrochest proved the necessity of

(a) carbon dioxide for photosynthesis
(b) chlorophyll for photosynthesis
(c) light for photosynthesis
(d) all the above

4. Simple experimental materials used by Priestly to discover oxygen liberation by plants were

(a) cat, plant, and fuel (b) mint, mouse and the candle
(c) plant, ant and the fire (d) none of these

5. The starch, as a product of photosynthesis, was discovered by

(a) Stephan Hale (b) Robert Meyer (c) Sachs (d) Hill

6. The mechanism of photosynthesis, for the first time, was given by

(a) Jean Senebier (b) Dutrochest (c) Robert Meyer (d) none of these

7. Ingen Housz found that

(a) plants require chlorophyll to liberate oxygen
(b) plants require carbon dioxide to liberate oxygen
(c) plants require light to liberate oxygen
(d) all the above

8. The seat of photosynthesis is

(a) mitochondrian (b) plastid (c) chloroplast (d) endoplasmic reticulum

9. The seat of light reaction in chloroplast is the

(a) granum (b) stroma (c) periplastidal space (d) all these

10. Stroma is the seat of

(a) light reaction (b) dark reaction
(c) Kreb's cycle (d) glycolysis

11. During photosynthesis, light energy is converted into

(a) radiant energy (b) chemical energy
(c) electrical energy (d) none of these

12. Hill 's reaction is the other name of

(a) dark reaction (b) light reaction
(c) photosynthetic process (d) none of these

13. Dark reaction of photosynthesis is also called

(a) Blackmann's reaction (b) photophosphorylation
(c) glycolysis (d) none of these

14. During light reaction of photosynthesis,

(a) phosphorylation of ADP molecules takes place
(b) removal of phospate group from ATP takes place
(c) formation of $FADH_2$ takes place
(d) all the above processes take place

15. The function of chlorophyll during photosynthesis is the absorption of

(a) water (b) CO_2 (c) both water and CO_2 (d) light

16. The photosynthetic units are

(a) thylakoids (b) quantasomes (c) chlorophyll molecules (d) all these

17. Which of the following equations sum up photosynthesis in presence of light and chlorophyll?

(a) $6\ CO_2 + 12\ H_2O \longrightarrow C_6H_{12}O_6 + CO_2 + 6\ H_2O$

(b) $6\ CO_2 + 6\ H_2O \longrightarrow C_6H_{12}O_6 + 6\ O_2$

(c) $CO_2 + H_2O \longrightarrow CH_2O + O_2$

(d) none of the above

18. During photosynthesis, a simple carbohydrate is formed with the help of CO_2 and

(a) oxygen (b) chlorophyll (c) water (d) all these elements

19. Which of the following statements is correct?

(a) Chlorophyll 'b' is the prominent pigment in photosynthesis
(b) Chlorophyll 'a' is the prominent pigment in photosynthesis
(c) carotenoids are the important pigments in photosynthesis
(d) all the above

20. There are two photosystems in the chloroplasts namely

(a) light system I and light system II
(b) photosystem I and photosystem II
(c) quantasome I and quantasome II
(d) thylakoid system I and thylakoid system II

21. In photosystem I, there is an involvement of

(a) chlorophyll 'a 680 ' (b) chlorophyll 'a 700'
(c) chlorophyll 'b' (d) all these

22. In photosystem II there is an involvement of

(a)chlorophyll 'a 700' (b) chlorophyll 'a 690'
(c) both photosystems I and II (d) none of these

23. Granum has

(a) photosystemI (b) photosytem II
(c) both photosysterns I and II (d) none of these

24. Stroma lamelle has

(a) photosystem I only (b) photosystem II only
(c) photosystems I and II (d) none of these

25. In cyclic photophosphorylation

(a) photosystem II is involved (b) photosystem I is involved
(c) both are involved (d) neither is involved

26. The excitation of the chlorophyll molecules takes place when they absorb

(a) chemical energy (b) electrical energy
(c) radiant energy (d) all these

27. Chlorophyll molecules are highly sensitive to

(a) photons (b) electrons (c) neutrons (d) all these

28. The chlorophyll molecule has a metallic ion of

(a) ferrous (b) copper (c) magnesium (d) manganese

29. During light reaction, a process which releases oxygen is

(a) reduction (b) oxidation (c) photolysis (d) all these

30. Oxygen released during photosynthesis comes from

(a) carbon dioxide (b) chloroplast (c) water (d) all these

31. During light reaction,

(a) chemical energy is converted into radiant energy
(b) radiant energy is converted into chemical energy
(c) radiant energy is converted into electrical energy
(d) none of the above

32. Which of the following molecules are formed during light reaction?

(a) ATP (b) $NADPH_2$ (c) both ATP and $NADPH_2$ (d) none of these

33. NADP stands for

(a) Nitrogen Adenine Dinucleotide phosphate
(b) Nicotinamide Adenine Di-Phospate
(c) Nicotinamide Adenine Dinucleotide Phosphate
(d) Nicotinamide Adenine Di-Phospho-nucleotide

34. During photolysis of water, OH^- ions formed are taken up by

(a) a special fat molecule (b) a protein called Z-Mn
(c) a thylakoid membrane (d) none of these

35. The reduction of NADP in photosynthesis is caused by H^+ released during

(a) photolysis of water (b) cyclic photophosphorylation
(c) a metabolic process (d) none of these

36. The fact that oxygen released during photosynthesis is coming from water, was confirmed by using

(a) P^{32} (b) C^{14} (c) O^{18} (d) none of these

37. During noncyclic photophosphorylation, the loss of electrons by Chl 680 is made up by

(a) cyclic photophosphorylation (b) photolysis of water
(c) reduction of NADP (d) none of these

38. During noncyclic photophosphorylation, photosystems I and II are linked by

(a) plastoquinone (b) cytochrome f
(c) plastocyanin (d) pheophytin

39. The law of limiting factors was proposed by

(a) Senebier (b) Calvin (c) Hill (d) Blackmann

40. When radiant energy is converted into chemical energy during light reaction, which of the following reactions takes place?

(a) ATP – iP = ADP (b) GDP + iP = GTP
(c) ADP + iP = ATP (d) AMP + iP = ADP

41. Which of the following molecules is the primary carbon dioxide acceptor?

(a) RuMP (b) RuDP (c) NADP (d) ATP

42. Nobel prize was awarded to Melvin Calvin for his work on

(a) light reaction (b) dark reaction
(c) cyclic photophosphorylation (d) none of these

43. During Calvin's cycle, the carbon dioxide is

(a) split into carbon and oxygen
(b) totally fixed
(c) split into carbon monoxide and molecular oxygen
(d) none of the above

44. The dark reaction is so called because

(a) it takes place in the dark
(b) it requires both light and darkness alternately
(c) it requires no light
(d) it was discovered by the scientist Dark

45. PGA molecules, during dark reaction become PGALD by

(a) oxidation (b) reduction (c) hydrolysis (d) all these processes

46. Which of the following is involved in the reduction of PGA to PGALD?

(a) ATP (b) NADP (c) $NADPH_2$ (d) all these

47. The sedoheptulose sugar formed during dark reaction is

(a) 4-carbon compound (b) 5-carbon compound
(c) 7-carbon compound (d) 10-carbon compound

48. Which of the following steps are involved in a sequence during dark reaction?

(a) carboxylation-regeneration-reduction
(b) reduction-carboxylation-regeneration
(c) carboxylation-reduction-regeneration
(d) carboxylation-oxidation-reduction

49. During dark reaction of photosynthesis, regeneration involves the regaining of

(a) RuBP molecules (b) $NADPH_2$ molecules
(c) glucose molecules (d) ATP molecules

50. The end product of dark reaction is

(a) glucose (b) starch (c) $NADPH_2$ (d) ATP

51. Some bacteria also carry on photosynthesis because they contain

(a) incipient nuclei (b) bacteriochlorophyll
(c) muramic acid complex (d) mesosomes

52. Dihydroxy acetone phosphate is an isomer of

(a) PGA (b) PGALD (c) NADP (d) ATP

53. Three important molecules formed during light reaction are

(a) CO_2, ATP and $NADPH_2$ (b) O_2, ATP and $NADPH_2$
(c) O_2, RuDP and $NADPH_2$ (d) all these

54. Which of the following experiments is conducted to demonstrate the necessity of CO_2 for photosynthesis?

(a) Light screen experiment (b) Mohl's experiment
(c) Lime water experiment (d) none of these

55. The reagent used to test the presence of starch in leaves is

(a) bromide solution (b) chlorine water
(c) iodine solution (d) spirit

56. The C_4 pathway occurs among the

(a) pteridophytes (b) dicots
(c) grasses (d) gymnosperms

57. The C_4 pathway is named after

(a) Embden and Meyerhoff (b) Melvin and Calvin
(c) Hatch and Slack (d) none of these

58. Which of the following statements is correct?

(a) C_3 plants are more efficient than C_4 plants in carbon fixation
(b) C_4 plants are more efficient than C_3 plants in carbon fixation
(c) C_3 and C_4 plants are equally efficient in carbon fixation
(d) None of the above

8. RESPIRATION

1. Respiration is defined as

(a) chemical combustion of molecules
(b) biological oxidation of food molecules
(c) reduction of food molecules
(d) none of the above

2. Respiration is

(a) an anabolic process (b) a catabolic process
(c) a chemical process (d) all these

3. During respiration,

(a) energy is consumed (b) energy is produced
(c) energy is exhausted (d) energy is stored

4. During respiration,

(a) electrical energy is produced
(b) chemical energy is produced
(c) both electrical and chemical energy are produced
(d) none of the above

5. Aerobes respire in the

(a) absence of oxygen (b) presence of oxygen
(c) presence of CO_2 (d) presence of oxygen and CO_2

6. Anaerobes respire in the

(a) presence of CO_2 (b) presence of both O_2 and CO_2
(c) absence of O_2 (d) absence of CO_2

7. Energy currency in the living system is

(a) ATP (b) NAD (c) $C_6H_{12}O_6$ (d) GTP

8. During respiration.

(a) hydrogen acts as an oxidant (b) oxygen acts as an oxidant
(c) both H_2 and O_2 act as oxidants (d) many enzymes act as oxidants

9. The general furmula to sum up an anaerobic respiration is

(a) $C_6H_{12}O_6 + 6\ CO_2 \longrightarrow 6\ O_2 + 6\ H_2O + 673$ k cal
(b) $C_6H_{12}O_6 + 6\ O_2 \longrightarrow 6\ CO_2 + 6\ H_2O + 673$ k cal
(c) $C_6H_{12}O_6 + 6\ H_2O \longrightarrow 6\ CO_2 + 6\ O_2 + 673$ k cal
(d) none of the above

10. The respiratory substrates are

(a) carbohydrates (b) proteins (c) fats (d) all the above

11. Which of the following formulae sums up aerobic respiration ?

(a) $C_6H_{12}O_6 + 6\ CO_2 \longrightarrow 6\ O_2 + 6H_2O + 673$ k cal
(b) $C_6H_{12}O_6 + 6\ O_2 \longrightarrow 6\ CO_2 + 6\ H_2O + 673$ k cal
(c) $C_6H_{12}O_6 + 6\ H_2O \longrightarrow 6\ CO_2 + 6\ O_2 + 673$ k cal
(d) all the above under different conditions

12. Respiratory quotient is defined as

(a) the ratio of volume of CO_2 released to the volume of O_2 absorbed
(b) the amount of O_2 required to oxidise a molecule of carbohydrate
(c) volume of CO_2 released during respiration over a unit time
(d) none of the above

13. During aerobic respiration.

(a) oxygen is taken in and carbon dioxide is given out
(b) oxidation of glucose takes place
(c) release of water takes place along with release of energy
(d) all the above take place

14. RQ value for carbohydrate is

(a) one (b) more than one (c) less than one (d) none of these

15. RQ value for an organic acid is

(a) less than one (b) more than one (c) one (d) zero

16. RQ value for a fat is

(a) less than one (b) more than one (c) two (d) none of these

17. Incomplete oxidation of food molecules takes place during

(a) aerobic respiration (b) anaerobic respiration
(c) both aerobic and anaerobic respiration
(d) oxidation of a carbohydrate

18. Site of respiration in a living cell is

(a) chondriosome (b) ribosome
(c) endoplasmic reticulum (d) none of these

19. Adenosine triphosphate is

(a) a coenzyme (b) a nucleo protein
(c) a molecule with high energy phosphate bonds (d) none of these

20. Aerobic respiration involves the following sequential steps.

(a) Glycolysis – Kreb's cycle – Terminal oxidation
(b) Kreb's cycle – Glycolysis – Terminal oxidation

(c) Kreb's cycle – Terminal oxidation – Glycolysis
(d) All the above under different conditions

21. Glycolysis is otherwise called

(a)Hatch Slack pathway (b) EMP pathway
(c) AMP pathway (d) none of these

22. The site of glycolysis in a cell is

(a) mitochondrion (b) cytoplasm
(c) ribosomes (d) endoplasmic reticulum

23. The end product of glycolysis is

(a) phosphonoel pyruvic acid (b) pyruvic acid
(c) phosphoglyceric acid (d) fructose 1,6 diphosphate

24. Which of the following statements is correct ?

(a) Glycolysis takes place in aerobic respiration only
(b) Glycolysis takes place in anaerobic respiration only
(c) Glycolysis takes place in aerobic and anaerobic respiration
(d) Glycolysis takes place during fermentation only

25. During glycolysis, for every hexose sugar

(a) 2 $NADH_2$ molecules are formed
(b) 1 $NADH_2$ molecule is formed
(c) 4 $NADH_2$ molecules are formed
(d) no molecules are formed

26. A net profit of glycolysis with a molecule of glucose is the formation of

(a) 1 $NADH_2$, 2 ATP and 2 pyruvic acid molecules
(b) 2 $NADH_2$, 2 ATP and 1 pyruvic acid molecule
(c) 2 $NADH_2$, 2 ATP and 2 pyruvic acid molecules
(d) 2 $NADH_2$, 4 ATP and 2 pyruvic acid molecules

27. The site of Kreb's cycle is

(a) plasma membrane (b) mitochondrion
(c) chloroplast (d) cytoplasm

28. Citric acid cycle was discovered by

(a) Calvin (b) Devlin (c) Kreb (d) Green

29. Kreb's cycle starts with

(a) acetyl COA (b) pyruvic acid (c) citric acid (d) oxalo acetic acid

30. More energy is generated when

(a) a hexose sugar is converted into pyruvic acid
(b) a hexose sugar is converted into alcohol and CO_2
(c) pyruvic acid is converted into CO_2 and H_2O
(d) a hexose sugar undergoes fermentation

31. The percentage of O_2 available in the atmospheric air is around

(a) 50 (b) 20 (c) 0.3 (d) 0.03

32. The end products of Kreb's cycle are

(a) ATP , glucose and CO_2 (b) CO_2 , H_2O and ATP
(c) CO_2 , C_2H_5OH and H_2O (d) ATP , O_2 and H_2O

33. Oxidation of one pyruvic acid molecule results in _____ number of $NADH_2$ molecules.

(a) 4 (b) 8 (c) 2 (d) 10

34. Kreb's cycle does not take place in bacterial cells because

(a) they are lower organisms
(b) they lack mitochondria
(c) they do not like Kreb's cycle
(d) they do not want energy

35. The utilisable energy of a living cell is in the form of

(a) GTP (b) $NADH_2$ (c) $FADH_2$ (d) ATP

36. The total number of ATP molecules due to complete oxidation of a glucose molecule during respiration is

(a) 36 (b) 40 (c) 38 (d) 83

37. During respiration,

(a) photophosphorylation takes place
(b) oxidative phosphorylation takes place
(c) reduction takes place
(d) none of the above

38. The site of terminal oxidation is

(a) the mitochondrial matrix
(b) the perimitochondrial space
(c) the inner surface of the inner membrane
(d) the inner surface of the outer membrane

39. Succinic dehydrogeose converts succinic acid into fumaric acid with the formation of

(a) ATP molecule (b) $NADH_2$ molecule
(c) $FADH_2$ molecule (d) GTP molecule

40. The enzyme ATPase is found in the

(a) basepieceof the Racker's particle
(b) stalk piece of the Rackers particle
(c) head piece of the Rackers particle
(d) none of the above

41. The cytochrome chain is located

(a) in the mitochondrial matrix
(b) in the mitochondrion
(c) on the inner surface of the inner mitochondrial membrane
(d) on the inner surface of the outer membrane

42. The energy value of one $NADH_2$ molecule when it enters terminal oxidation is equivalent to

(a) 2 ATP molecules (b) 4 ATP molecules
(c) 3 ATP molecules (d) 8 ATP molecules

43. The energy value of one $FADH_2$ molecule when it enters terminal oxidation is

(a) 2 ATP molecules (b) 4 ATP molecules
(c) 1 ATP molecules (d) 3 ATP molecules

44. A pyruvic acid molecule during Kreb's cycle is finally converted into water with the liberation of

(a) 3 CO_2 (b) 6 CO_2 (c) 1 CO_2 (d) 2 CO_2

45. During anaerobic respiration, the number of ATP molecules formed is

(a) two (b) four (c) thirty eight (d) ten

46. The energy value of one ATP molecule is around

(a) 18 k.cal (b) 28 k .cal (c) 686 k .cal (d) 673 k.cal

47. The chain of cytochromes helps in

(a) photophosphorylation (b) electron transport system
(c) oxidation of hexose sugars (d) none of these

48. Electron transport systems in both photosynthesis and respiration require

(a) hexose sugar (b) radiant energy (c) cytochrome (d) none of these

49. When one $NADH_2$ enters the ETS, the ATP molecules are formed at

(a) 2 sites (b) 3 sites (c) 4 sites (d) 5 sites

50. During terminal oxidation, the molecular O_2 combines with H_2 which comes from

(a) $NADH_2$ (b) $FADH_2$ (c) both $NADH_2$ and $FADH_2$ (d) none of thes

51. The fast respiring tissues of the plant body are

(a) parenchyma (b) phloem (c) meristematic (d) all these

52. The physiologist who designed a fermentation tube is

(a) Ganong (b) Calvin (c) Kreb (d) Kuhne

53. Fermentation takes place

(a) intracellularly (b) extracellularly
(c) both intra and extracellularly (d) none of these

54. The food molecules that undergo oxidation during respiration are called

(a) food reserver (b) energy rich substances
(c) respiratory substrates (d) energy releasing substances

55. EMP path way is

(a) Emerson method in photosynthesis
(b) Erl Mayer parnas pathway
(c) Embden Meyerhoff Parnas pathway
(d) none of the above

56. The CO_2 released turns lime water milky when it is passed through it. This is due to the formation of

(a) calcium bicarbonate (b) calciun carbonate
(c) calcium sulphate (d) none of these

57. When yeast cells bring about fermentation, which of the following are formed?

(a) Methyl alcohol and CO_2 (b) Ethyl alcohol and CO_2
(c) Lactic acid and CO_2 (d) None of these

58. Which of the following statements is correct?

(a) Dry seeds do not respire (b) Dry seeds respire rapidly
(c) Dry seeds respire slowly (d) Dry seeds often respire

59. Which of the following statements is correct?

(a) Oxygen is the oxidant during photophosphorylation whereas light is the factor during oxidative phosphorylation
(b) Oxygen is the oxidant during oxidative phosphorylation whereas light is the factor during photophosphorylation
(c) Both oxygen and light are the factors required for both the phosphorylations
(d) Both oxygen and light are required for oxidative phosphorylation

9. GROWTH AND DEVELOPMENT

1. Growth in living Organisms is

(a) by intussusception (b) external
(c) both internal and external (d) none of these

2. Growth is

(a) a permanent change
(b) an irreversible change
(c) accompanied by increase in dry weight
(d) all the above

3. Growth is the

(a) manifestation of all the chemical activities
(b) manifestation of all the metabolic activities
(c) manifestation of only anabolic processes
(d) none of the above

4. The plants keep growing

(a) till the time of flowering (b) till the fruits are formed
(c) throughout the life generally (d) till fruits and seeds are shed

5. The growing region of the plant body is

(a) meristematic region (b) internodal region
(c) cortex (d) parenchymatous region

6. Growth curve plotted in respect of growth in organisms is called

(a) sigmoid curve (b) Y-curve (c) a semicircular curve (d) none of these

7. The growth curve

(a) varies from plant to plant (b) varies from animal to animal
(c) is common to all organisms (d) all these are possible

8. If we observe growth curve, there is an initial

(a) log phase (b) lag phase (c) exponential phase (d) none of these

9. The duration of steady increase of growth is called

(a) exponential period (b) grand period of growth
(c) both (a) and (b) (d) none of these

10. The three phases of growth are

(a) cell division, cell elongation and cell maturation
(b) tissue division, tissue differentiation and tissue maturation
(c) both (a) and (b)
(d) none of the above

11. Arc auxanometer is used to measure

(a) the increase in dry weight of the plant
(b) the increase in length of the stem axis
(c) the increase in thickness of the stem
(d) none of the above

12. Auxins are the

(a) enzymes (b) vitamins (c) hormones (d) proteins

13. The naturally occuring auxin is

(a) indole-3 butyric acid (b) Indole-3 acetic acid
(c) Indole-3 propionic acid (d) ethylene

14. The classical experiments on Avena were conducted by

(a) F.A. Went and F.W. Went (b) Boysen-Jenson
(c) Kogl (d) all these

15. **The concentration of auxins is more in**
(a) apices of the root (b) apices of the stem
(c) internodal regions (d) cortical regions

16. **Indole-3 acetic acid was isolated by**
(a) Skoog and Miller (b) Sumiki and Yasuda
(c) Kogl (d) F.A. Went and F.W. Went

17. **Auxins bring about**
(a) root formation (b) callus formation
(c) embryoid formation (d) all of these

18. **I.B.A. stands for**
(a) Indole-3-Butyric acid (b) Indole Bicarboxylic acid
(c) both (a) and (b) (d) neither (a) nor (b)

19. **The auxin that is used as a weedicide is**
(a) IAA (b) IBA (c) 2,4-D (d) NAA

20. **NAA stands for**
(a) α-Naphthalene Acetic Acid (b) Ninhydrin Amino Acid
(c) Naphthalene Acetic Acid (d) none of these

21. **2,4-D is a**
(a) cytokinin (b) gibberellin (c) auxin (d) all these

22. **Which of the following effects of hormones on plants are of horticultural importance?**
(a) growth curvatures (b) seed germinators
(c) root induction in stem cuttings (d) none of these

23. **The gibberellins are**
(a) phytohormones (b) animal hormones
(c) produced by both plants and animals (d) none of these

24. **Gibberellins were first isolated by**
(a) Sawada and Kurosawa (b) Yabuta and Sumiki
(c) F.A. Went and F.W. Went (d) Kogl

25. **Premature withering of fruits is due tothe formation of**
(a) 2,4-D (b) IAA (c) ABA (d) GA_3

26. **Which of the following phytohormones make the genetically dwarf plant to grow tall?**
(a) Auxin (b) Cytokinin (c) Gibberellin (d) Abscissic acid

27. **Gibberellin was first isolated from a fungus called**
(a) Fusarium (b) Aspergillus (c) Agaricus (d) Cercospora

28. **The Gibberellic acids bring about**
(a) rapid cell division (b) internodal elongation
(c) increase in nodal thickness (d) none of these

29. **The seed dormancy is broken by the application of**
(a) auxins (b) cytokinins (c) gibberellins (d) abscissic acid

30. **Parthenocarpic fruits are produced by the application of**
(a) auxins (b) cytokinins (c) gibberellins (d) abscissic acid

31. **Fruit ripening on a commercial scale is done by the application of**
(a) IAA (b) 2,4-D (c) ethylene (d) gibberellin

32. The relative duration of light and darkness, to which the plants are exposed for flowering, is called

(a) vernalization (b) photoperiod
(c) period of florigen production (d) none of these

33. Long day plants are those which

(a) grow long during day time
(b) grow fast during sunlight
(c) require a photoperiod more than a critical length for flowering
(d) none of the above

34. The short day plants can be correctly called as

(a) dwarf day plants (b) long night plants
(c) short night plants (d) day-night plants

35. Which of the following statements is correct?

(a) Day neutral plants do not flower
(b) Day neutral plants flower during night only
(c) Day neutral plants are not affected by the length of the day for flowering
(d) Day neutral plants flower both during night and day

36. The phenomenon of making the plants to flower by cold treatment is called as

(a) photoperiodism (b) vernalization
(c) bolting (d) none of these

37. The cytokinins are abundantly found in

(a) seeds (b) styles and stigma
(c) coconut milk (d) throughout the plant bodies

38. Cytokinins were first discovered by

(a) F.A Went and F.W. Went (b) Boysen-Jensen
(c) Miller and Skoog (d) Yabuta and Sumiki

39. 6-furfuryl aminopurine is

(a) an auxin (b) a gibberellin (c) a cytokinin (d) a heterauxin

40. The cytokinins are known to bring about

(a) rapid cell elongation (b) rapid cell division
(c) rapid flowering (d) none of these

41. The auxins generally accelerate

(a) growth rate (b) seed production
(c) rate of seed germination (d) none of these

42. The phytohormone that is resposible for apical dominance is

(a) gibberellin (b) auxin (c) cytokinin (d) abscissic acid

43. When Avena coleoptile is exposed to unilateral light, it bends towards light because

(a) more growth takes place at the light region
(b) equal growth takes place at both light and shaded regions
(c) more growth takes place at the shaded region
(d) it requires light for photosynthesis

44. Removing the apical bud in a plant

(a) stops its further growth (b) results in more branches
(c) results in lesser yeild (d) reduces its requirements

45. During winter, trees shed leaves because of the synthesis of

(a) more auxins (b) abscissic acid (c) cytokinins (d) none of these

46. The auxins generally

(a) enhance the metabolic rate (b) hinder the metabolic rate
(c) influence the catabolic process (d) bring about all the above

47. The auxins nullify the effect of

(a) gibberellins (b) cytokinins (c) abscissic acid (d) all these

48. IBA is known for

(a) root initiation (b) shoot initiation
(c) callus formation (d) none of these

49. 2,4,5,-T is used for

(a) inducing shoot formation (b) killing the weeds
(c) inducing the root formation (d) all these

50. Which of the following is a kinetin?

(a) Indole propionic acid (b) GA_3
(c) Benzylamino purine (d) 2,4,5-Trichlorophenoxy acetic acid

10. PLANT MOVEMENTS

1. Irritability is

(a) movement due to irritation
(b) movement in response to the external stimulus
(c) agitated movement
(d) movement due to internal stimulus

2. Movement is said to be spontaneous when the organism

(a) moves in response to external stimulus (b) moves on its own accord (c) moves slowly (d) moves fast

3. Though the trees do not move

(a) the cells within them move from one part to the other
(b) the nuclei move from one cell to the other
(c) the protoplasm inside the cell moves (d) all the above

4. Plant organs exhibit

(a) rotatory movements (b) curvature movements
(c) constant movement on only one side (d) none of these

5. The reaction of the plant to a stimulus is called

(a) perception (b) stimulus (c) response (d) irritability

6. A few specific regions which respond to the stimulus are called as

(a) responsible regions (b) stimulatory regions
(c) perceptive regions (d) none of these

7. Preservation time is

(a) the maximum time of application of stimulus to see the response
(b) the minimum time of application of stimulus to see the

response (c) preservation of stimulus to see the response
(d) none of these

8. The time taken for the stimulus to travel from perceptive region to responsive region is called

(a) time interval (b) stimulating time
(c) transmission time (d) preservation time

9. The time lapse between the initiation of stimulus and the response is called

(a) post stimulus time (b) pre-responsive time
(c) reaction time (d) none of these

10. Sperms or antherozoids among lower plants exhibit

(a) thermonastic movements (b) chemotactic movements
(c) chemonastic movements (d) photonastic movements

11. The vital movements caused by external stimulus are called as

(a) autonomic movements (b) paratonic movements
(c) hygroscopic movements (d) none of these

12. Tropic movements are

(a) growth movement of curvature (b) growth movement caused by diffused stimulus (c) both of the above (c) neither (a) nor (b)

13. The heliotropic movement is the curvature movement due to the stimulus

(a) temperature (b) gravitational force (c) light (d) water

14. The curvature movement due to the gravitational force is called

(a) phototropism (b) hydrotropism (c) geotropism (d) thigmotropism

15. The radicle of the seed is

(a) negatively geotropic (b) positively geotropic
(c) negatively hydrotropic (d) none of the above

16. When a shoot apex is subjected to unilateral light, it bends towards light because it is

(a)negatively heliotropic (b) positively hydrotropic
(c) positively heliotropic (d) negatively hydrotropic

17. The root system is

(a) positively hydrotropic (b) negatively hydrotropic
(c) positively phototropic (d) none of these

18. Which of the following is involved in phototropism?

(a) gibberellin (b) cytokinin (c) auxin (d) ABA

19. The tendrils twin around a support due to

(a) phototropism (b)hydrotropism
(c) thigmotropism (d) geotropism

20. The growth movement due to a stimulus of contact is called

(a) thigmotropism (b) heliotropism
(c) geotropism (d) none of these

21. **The hydrotropic force is**

(a) less than the geotropic force (b) more than the geotropic force (c) more than the thigmotropic force (d) all these under different conditions

22. **The haptotropism is the other name for**

(a) geotropism (b) thigmotropism (c) phototropism (d) hydrotropism

23. **The instrument clinostat is used to demonstrate**

(a) hydrotropism (b) phototropism (c) geotropism (d) thigmotropism

24. **The paratonic–nastic movement is**

(a) independent of the direction of stimulus (b) dependent on the direction of stimulus (c) curvature movement (d) none of these

25. **The nastic movement due to light and temperature is said to be**

(a) photonastic (b) thermonastic (c) nyctinastic (d) seismonastic

26. **In oxalis the movement observed is**

(a) thermonastic (b) photonastic (c) seismonastic (d) none of these

27. **In Tulips the flowers close and open due to**

(a) photonastic movement (b) nyctinastic movement
(c) thermonastic movement (d) seismonastic movement

28. **The nastic movement due to shock or touch is called as**

(a) thigmonastic movement (b) seismonastic movement
(c) photonastic movement (d) none of these

29. **When the leaves of Mimosa pudica are touched they immediately close. It is due to**

(a) thigmonastic movement (b) thermonastic movement
(c) seismonastic movement (d) photonastic movement

30. **The seismonastic movement in Mimosa pudica is due to**

(a) the presence of Pulvinus (b) the turgor changes in cells of pulvinus (c) the turgor changes in two groups of cells in pulvinus (d) all these

31. **The insectivorous plants like Drosera exhibit**

(a) seismonastic movement (b) thigmonastic movement
(c) photonastic movement (d) nyctinastic movement

32. **The phototropic chamber is used to demonstate**

(a) geotropism (b) heliotropism (c) hydrotropism (d) none of these

33. **In nastic mo vements the stimulus is**

(a) acting on a particular point of an organ (b) uniformly spread in the organ (c) spread bidirectionally (d) none of these

34. **The movement of pollen tube towards the ovule during fertilization is due to**

(a) thigmotropism (b) thigmonastic movement
(c) chemotactic movement (d) photonastic movement

35. **The tropic movements are**

(a) bidirectional (b) unidirectional (c) multidirectional
(d) none of these

11. PLANT TISSUES

1. Anatomy deals with

(a) the tissues (b) internal structure of the plants and animals
(c) external structure of plants and animals (d) external and internal morphology of organisms

2. Anatomy is also called as

(a) the external morphology (b) the internal morphology
(c) tissue study (d) overall structure

3. A tissue is defined as

(a) a group of cells (b) a group of cells with a common function
(c) a group of cells with a common origin, structure and function
(d) a group of cells with a common structure

4. The assembly of many types of tissues makes up

(a) an organism (b) an organ (c) a compound tissue (d) none of these

5. An organism like a plant is an assembly of many

(a) types of tissues (b) organs (c) branches and roots (d) all these

6. A group of rapidly dividing cells is called as

(a) parenchymatous tissue (b) collenchymatous tissue
(c) meristematic tissue (d) phloem tissue

7. The meristematic tissues are found in

(a) old parts of the plant body (b) root system of the plant body
(c) shoot system of the plant body (d) growing regions of the plant body

8. "Meristos" means

(a) merited (b) to become intelligent (c) to divide (d) none of these

9. Compact arrangement, dense protoplasm and conspicuous nucleus are the features of

(a) apical merristems (b) intercalary meristems
(c) lateral meristems (d) all these

10. The plastids in meristematic cells are in a

(a) fully developed state (b) half developed state
(c) proplastid state (d) preplastid state

11. Which of the following statements is correct?

(a) Meristematic tissues are derived from the permanent tissues
(b) permanent tissues are derived from the apical meristems
(c) Permanent tissues are derived from the meristematic tissues
(d) None of the above

12. Apical cell theory was proposed by

(a) Schmidt (b) Hanstein (c) Nageli (d) none of these

13. The Histogen theory was proposed by

(a) Hanstein (b) Schmidt (c) Nageli (d) Esau

14. According to histogen theory, the apex is made up of

(a) two histogens (b) three histogens (c) one histogen (d) four histogens

15. **The three histogens at the shoot apex are**

(a) plerome, cambium and apical dome (b) dermatogen , plerome and periblem (c) tunicum, carpum and cambium (d) none of these

16. **The Tunica–Carpus theory was proposed by**

(a) Schmidt (b) Nageli (c) Hanstein (d) Esau

17. **The carpus layer of cells is found**

(a) above the tunica layer (b) between the tunica and epidermis
(c) below the tunica layer (d) parallel to tunica layer

18. **Vascular cambium is an example for**

(a)intercalary meristem (b) apical meristem
(c) lateral meristem (d) secondary meristem

19. **Interfascicular cambium is a**

(a) primary meristem (b) secondary meristem
(c) intercalary meristem (d) apical meristem

20. **The primary meristem found at the base of a leaf is called**

(a) an intercalary meristem (b) a lateral meristem
(c) an apical meristem (d) none of these

21. **The secondary meristem formed in the cortex is**

(a) intrafascicular cambium (b) interfascicular cambium
(c) phellogen (d) lateral meristem

22. **The permanent tissue is so called because**

(a) there is no further differentiation in them (b) they are derived from meristematic tissues (c) they undergo further differentiation (d) they are fixed without showing any metabolism

23. **The photosynthetic parenchyma tissue is called**

(a) collenchyma (b) chlorenchyma
(c) aernchyma (d) pith parenchyma

24. **The simple mechanical tissues are**

(a) parenchyma and collenchyma
(b) collenchyma and chlorenchyma
(c) collenchyma and sclerenchyma (d) xylem and sclerenchyma

25. **Sclerenchyma is**

(a) living and mechanical (b) dead and mechanical
(c) living and thin walled (d) none of these

26. **A thick secondary wall is found uniformly in**

(a) collenchyma (b) xylem vessel
(c) sclerenchyma (d) parenchyma

27. **The position of collenchyma in the plant body is**

(a) hypodermal (b) epidermal (c) inner cortex (d) pith

28. **Aerenchyma is so called because**

(a) the cells contain air in them (b) the cells have air in between them (c) the cells are found in hydrophytes
(d) the cells are very light

29. The corner walls are pectinised in

(a) sclerenchyma (b) collenchyma
(c) parenchyma (d) xylem vessels

30. The shoot elongates due to the activity of

(a) lateral meristem (b) intercalary meristem
(c) apical meristem (d) secondary meristem

31. The soft regions of the plant body show the presence of

(a) collenchyma (b) sclerenchyma
(c) parenchyma (d) all these

32. Simple tissues are so called because

(a) they are thin walled (b) they have only one cell type each
(c) they can be easily studied (d) they are not complex

33. The complex tissues are

(a) xylem and sclerenchyma (c) xylem and phloem
(b) phloem and parenchyma (d) all these

34. The complex tissues are so called because

(a) they show complex structures (b) they have more than one cell type (c) they are studied only under compound microscope (d) none of these

35. The coir is nothing but

(a) long parenchyma cells (b) sclerenchyma fibres
(c) stone cells (d) collenchyma cells

36. The apple fruit has plenty of

(a) fibres (b) sclereids (c) seeds (d) none of these

37. The coconut shell is full of

(a) sclerenchyma fibres (b) sclereids
(c) collenchyma (d) xylem

38. The bast fibres are nothing but

(a) xylem fibres (b) phloem fibres
(c) ordinary sclerenchyma fibres (d) all these

39. The xylem and phloem are

(a) food and water conducting tissues respectively (b) water and food conducting tissues respectively (c) both water conducting tissues (d) both food conducting tissues

40. Xylem is a

(a) water conducting tissue (b) mechanical tissue
(c) both (a) and (b) (d) neither (a) nor (b)

41. Wood is nothing but

(a) the xylem tissue (b) the phloem tissue (c) cortex (d) stele

42. **The xylem of Pteridophyta contain the**

(a) vessels (b) tracheids (c) thick walled xylem (d) none of these

43. **The upward movement of water is**

(a) easier in tracheids than in vessels
(b) easier in vessels than in tracheids
(c) easy in both vessels and tracheids
(d) difficult in both vessels and tracheids

44. **The sieve tube and companion cell are**

(a) derived from two different cells (b) derived from more than two cells (c) derived from a single mother cell
(d) none of these

45. **Some plants like Calotropis contain milky substance because of**

(a) plenty of phloem tissue (b) mucilaginous tissue
(c) laticiferous tissue (d) resin secreting tissue

46. **The function of the phloem is the**

(a) conduction of water and mineral salts (b) translocation of solutes (c) mechanical support (d) none of these

47. **Which of the following has no nucleus?**

(a) Companion cell (b) Sieve tube
(c) Cambial cell (d) Epidermal cell

48. **The guard cells are**

(a) hypodermal cells (b) specialised epidermal cells
(c) cortical cells (d) specialised lenticels

49. **The central core of the stem enclosing the vascular bundles is called as the**

(a) steel (b) steal (c) stele (d) all these

50. **The compact structures enclosing xylem and phloem are called**

(a) bundles of conducting tissues (b) vascular bundles
(c) bundles of complex tissues (d) all these

51. **The perforated end walls of the sieve tubes are called**

(a) sieve elements (b) sieve plates (c) lid of sieve tubes
(d) sieve cell plates

52. **In an eustele, the vascular bundles are**

(a) scattered in the ground tissue (b) arranged in a ring
(c) arranged one below the other (d) all these

53. **In an atactostele, the vascular bundles are**

(a) scattered in the ground tissue (b) regularly arranged to form a broken ring (c) arranged in pairs (d) none of these

54. **If a patch of cambium is present in the vascular bundle, it is called**

(a) a closed bundle (b) an open bundle
(c) a concentric bundle (d) a radial bundle

55. The concentric vascular bundles are found in

(a) dicots (b)monocots (c) Pteridophyta (d) none of these

56. If the xylem, phloem are arranged in the same radius the vascular bundle is said to be

(a) closed (b) collateral (c) radial (d) none of these

57. When the xylem and phloem are arranged at different radii alternately, the vascular bundles are called

(a) bicollateral (b) collateral (c) concentric (d) radial

58. In a bicollateral vascular bundle, there are

(a) two patches of xylem, two patches of phloem and two patches of cambium (b) two patches of cambium, two patches of phloem and one patch of xylem (c) two patches of xylem, one patch of phloem and two patches of cambium (d) two patches of phloem, one patch of cambium and one patch of xylem

59. The vessels differ from the tracheids

(a) in having large perforated end walls (b) in having larger diameters (c) being stouter (d) all these

60. The two components of a sclerenchyma tissue are

(a) fibres and the sieve tubes (b) vessels and the fibres
(c) fibres and the sclereids (d) none of these

61. If the xylem is developed centrifugally in a vascular bundle , then it is called

(a) endarch (b) exarch (c) mesarch (d) none of these

62. The exarch xylem is found in

(a) Collateral vascular bundles (b) bicollateral vascular bundles
(c) radial vascular bundles (d) concentric vascular bundles

63. If the xylem is surrounded by a phloem ring, then the vascular bundle is said to be

(a) amphicribal (b) amphivasal (c) radial (d)Collateral

64. The cambial cells show a characteristic arrangement called

(a) uniseriate (b) storeyed (c) biseriate (d) multiseriate

65. The guard cells differ from other epidermal cells in having

(a) the nucleus (b) chloroplast (c) cell walls (d) bean shape

66. Which of the following cells helps in closing and opening of stomata?

(a) epidermal cells (b)subsidiary cells
(c) guard cells (d) none of these

67. The columnar parenchyma cells along with chloroplasts constitute

(a) spongy parenchyma (b) aerenchyma
(c) palisade parenchyma (d) chlorenchyma

68. The simplest type of stele found in primitive pteridophytes

is called

(a) an eustele (b) an atactostele (c) a protostele (d) a dictyostele

69. The activity of cambium is

(a) continuous (b) seasonal (c) indefinite (d) definite

70. The phloem is composed of

(a) sieve tubes and sieve plates (b) companion cells
(c) phloem parenchyma and bast fibres (d) all these

71. The transfer cells are discovered in phloem tissues of

(a) roses (b) dicots (c) leguminous plants (d) none of these

72. The tissue that can absorb the atmospheric moisture is the

(a) sclerenchyma fibres (b) spongy parenchyma
(c) velamen tissue (d) bark

73. The secondary wood is very hard because of

(a) lignification (b) suberization
(c) deposition of cuticle (d) pectinization

74. Which of the following statements is correct?

(a) The permanent tissues are dead (b) The permanent tissues are alive (c) The permanent tissues may be alive or dead (d) The permanent tissues gradually die

75. The cork cells have

(a) pectinized walls (b) lignified walls
(c) suberized walls (d) thick cuticles

76. If the central phloem is surrounded by a xylem ring, the concentric vascular bundle is called

(a) amphivasal (b) amphicribal (c) concentric (d) radial

77. When the parenchyma acquires the meristematic properties, it is called as a process of

(a) differentiation (b) dedifferentiation
(c) both (a) and (b) (d) none of these

78. The parenchyma cells in the pith of sagopalms are full of

(a) proteins (b) fats and oils (c) starch (d) all these

79. The sieve cells are found in

(a) dicots (b) monocots (c) gymnosperms (d) all these

80. The epidermal cells show

(a) inter-cellular spaces (b) no intercellular spaces
(c) both (a) and (b) (d) none of these

12. ANATOMY OF PLANT PARTS

1. **The type of primary meristems found in the plant body is**
(a) three (b) two (c) one (d) many

2. **The surface layer of cells in roots is called as**
(a) epidermis (b) exodermis (c) epiblema (d) all these

3. **The epiblema is also called as piliferous layer because it**
(a) produces multicellular stem hairs (b) produces unicellular root hairs (c) produces ferrous containing cells (d) none of these

4. **The centripetal mode of development of xylem is seen in**
(a) stems (b) leaves (c) roots (d) all these

5. **The polyarch condition refers to**
(a) four patches of xylem and phloem (b) many patches of xylem and phloem (c) five patches of xylem and phloem (d) free distribution of xylem and phloem

6. **The pith is invariably present in the**
(a) dicot root (b) monocot root (c) monocot leaf (d) dicot leaf

7. **Radially elongated cells connecting the pith and the cortex, are called**
(a) radiating cells (b) medulla cells (c) radial cells (d) medullary rays

8. **Tetrarch, exarch and radial conditions of vascular bundles are the features of**
(a) a monocot root (b) a dicot stem
(c) a dicot root (d) a dorsiventral leaf

9. **A monocot root differs from a dicot root in having**
(a) radial vascular bundles (b) exarch vascular bundles (c) polyarch nature of vascular bundles (d) pentarch nature of vascular bundles

10. **Medulla is nothing but**
(a) a part of the brain (b) the pith (c) the cortex (d) Medullosa

11. **The cells surrounding the guard cells are called**
(a) lenticels (b) epidermal cells (c) subsidiary cells (d) storage cells

12. **The inward rolling of grass leaves is due to the loss of turgidity in**
(a) epidermal cells (b) subsidiary cells (c) guard cells (d) motor cells

13. **The plerome is histogen that develops into**
(a) cortex (b) stele (c) epidermis (d) none of these

14. **Thick cuticle, multilayered epidermis, sunken stomata are the features of**
(a) mesophytic plants (b) hydrophytes
(c) xerophytes (d) epiphytes

15. **The roots of epiphytic orchids have a special tissue called**

(a) assimilatory tissue (b) transfusion tissue
(c) velamen tissue (d) secretary tissue

16. The cortex of a dicot or a monocot root has

(a) more than one type of tissue (b) only one type of tissue
(c) many types of tissues (d) one to many tissues

17. The endodermis is

(a) the outer most layer of the stele (b) the inner most layer of the cortex (c) not a part of cortex (d) not a part of stele

18. The pericycle is a part of the

(a) stele (b) cortex (b) both stele and the cortex (d) none of these

19. The pericycle in roots is very important because

(a) it is the outer part of the stele (b) lateral roots arise from it
(c) it protects xylem and phloem (d) none of these

20. The roots differ from stems in showing

(a) exogenous branching (b) endogenous branching
(c) cortex-stele differentiation (d) none of these

21. The passage cells are found in

(a) epidermis (b) exodermis (c) endodermis (d) pericycle

22. The casparian thickenings are seen in

(a) endodermal cells (b) radial walls of endodermal cells
(c) inner tangential walls of endodermal cells (d) all these

23. The passage cells are so called because

(a) they pass through the endodermis (b) they connect the cortex and the stele (c) water from the cortex pass through them into the stele (d) none of these

24. The root hairs are

(a) the extra structures found on the epidermis of root
(b) the extensions of many epiblema cells (c) multicellular outgrowths of epiblema layer (d) all these under certain conditions

25. The epidermis in leaves becomes discontinuous because of the presence of

(a) lenticells (b) stomata (c) epidermal outgrowths (d) all these

26. The periblem which is a histogen produces

(a) the stele (b) the epidermis (c) the cortex (d) all these

27. The xylem in stem differs from that of root in showing

(a) exarch condition (b) endarch condition
(c) mesarch condition (d) none of these

28. The haustorium is found in

(a) epiphytes (b) parasites (c) xerophytes (d) mesophytes

29. The vascular bundles are scattered in

(a) the monocot root (b) the dicot stem
(c) the monocot stem (d) the dicot root

30. The lysigenous cavity is found in the vascular bundle of a

(a) dicot stem (b) monocot stem (c) dicot root (d) monocot root

31. In the stem of Helianthus, the nature of vascular bundles is

(a) bicollateral, endarch and open (b) open, collateral and exarch (c) collateral, endarch and open (d) collateral, endarch and closed

32. The radial vascular bundles are

(a) always closed (b) always open (c) some times closed and sometimes open (d) none of these

33. Though the vascular bundles in maize stem are scattered, they show

(a) different orientation individually (b) common orientation (c) two types of orientations (d) four different types of orientations

34. The bundle cap in the Helianthus stem is a part of

(a) vascular bundle (b) endodermis (c) pericycle (d) pith

35. The cambium already present within the open vascular bundle is called as

(a) interfascicular cambium (b) intrafascicular cambium
(c) vascular cambium (d) all these

36. The stelar cambium during secondary growth produces

(a) secondary xylem outside and secondary phloem inside
(b) phellum outside and phelloderm inside
(c) secondary phloem outside and secondary xylem inside
(d) secondary xylem and phloem towards outside and pith towards inside

37. The activity of vascular cambium is

(a) more towards outside than towards inside (b) more towards inside than towards outside (c) equal both towards inside and outside (d) none of these

38. The thickness of the spring wood is

(a) more than that of the autumn wood (b) less than that of the autumn wood (c) equal to that of the autumn wood (d) none of the above

39. The age of a tree is determined by

(a) counting the number of branches produced every year (b) measuring the height (c) counting the number of annual rings (d) measuring the thickness of the stem

40. The study of timbers is called

(a) sericulture (b) moriculture (c) sylviculture (d) tissue culture

41. Anomalous secondary growth takes place in plants like

(a) Zea mays (b) Cucurbita (c) Dracaena (d) Helianthus

42. Which of the following statements is correct?

(a) Phellogen is found in the cortex from the beginning
(b) Phellogen is differentiated in the cortex during secondary growth (c) Phellogen is under dormancy in the cortex
(d) The existing permanent cells in the cortex undergo dedifferentiation into phellogen during secondary growth

43. The other name for phellogen is

(a) the cork (b) the secondary cortex (c) cork cambium (d) bark

44. The bark is anatomically called as

(a) phelloderm (b) phellum (c) phellogen (d) periderm

45. Which of the following statements is correct?

(a) Phellogen produces phellum inside and phelloderm outside
(b) Phellogen produces phelloderm inside and phellum outside
(c) Phellogen produces both phellum and phelloderm outside
(d) Phellogen does not produce the phellum and phelloderm at all

46. The bark is composed of the

(a) cork cambium, primary cortex and lenticels
(b) cork, cork cambium and the secondary cortex (c) cork only
(d) cork and the cork cambium

47. The cork cells are highly

(a) lignified (b) cutinised (c) suberised (d) pectinised

48. Which of the following is correct?

(a) Lenticels are formed during secondary growth (b) Lenticels help in aeration (c) Lenticels bring about lenticular transpiration
(d) All the above

49. Commercial cork is obtained from the plant

(a) Hibiscus (b) Dalbergia (c) Quercus (d) Acacia

50. In a dorsiventral leaf, the mesophyll tissue is made up of

(a) palisade parenchyma (b) spongy parenchyma (c) both palisade and spongy parenchyma (d) none of these

51. In a dorsiventral leaf,

(a) more stomata are distributed on the upper surface (b) less stomata are distributed on the lower surface (c) more stomata are distributed on the lower surface (d) the stomata are equally distributed on both surfaces

52. Wooden furniture are the products of

(a) primary wood (b) secondary wood (c) tertiary wood (d) none of these

53. The thick, hard and dark wood in the timber is called as

(a) albernum (b) good wood (c) duraman (d) secondary wood

54. On the upper epidermis of some grasses there are many groups of large cells called

(a) large epidermal cells (b) bulliform cells.
(c) guard cells (d) subsidiary cells

55. Cambium is

(a)less active in spring than in autumn (b) more active in spring than in autumn (c) equally active in both spring and autumn (d) none of the above

56. Loosely arranged parenchyma cells in lenticels are called as

(a) aerenchyma (b) parenchyma (c) complementary tissue (d) none of these

57. In an isobilateral, the stomata are found

(a) more on upper epidermis (b) less on upper epidermis (c) distributed equally on both upper and lower epidermis (d) more on lower epidermis

58. The leaves fall off due to

(a) weakness (b) dry conditions (c) the formation of abscission layer (d) none of these

59. The upper surface of a dorsiventral leaf is dark green because

(a) mesophyll tissue is green in colour (b) epidermis contains a large number of chloroplasts (c) more number of chloroplasts present in palisade are found just below the upper epidermis (d) more number of chloroplasts are found in spongy parenchyma

60. The grains we observe on the wooden plank are due to the formation of

(a) secondary tissues (b) annual ring
(c) heart wood (d) soft wood

FIRST YEAR P. U. C. PORTIONS TO MAKE YOU MORE PERFECT

1. The biochemist who first crystallised TMV was

(a) Noward (b) Beijernick (c) Stanley (d) Darwin

2. The nucleoid is merely

(a) nucleic acid (b) a small nucleus (c) a conspicuous nucleus (d) none of these

3. The genetic material in a plant virus is

(a) DNA (b) RNA (c) both DNA and RNA (d) none of these

4. The nucleic acid found in a bacteriophage is

(a) RNA (b) DNA (c) both DNA and RNA (d) none of these

5. The length of a TMV is around

(a) 3000 μ (b) 1000 A (c) 3000 Å (d) 2130 Å

6. The capsomeres which are protein units are found in

(a) TMV (b) bacteriophage (c) all viruses (d) none of these

7. The Division Protophyta includes

(a) bacteria and blue-green algae (b) viruses and green algae (c) viruses and Mycoplasma (d) all primitive plants

8. PPLO stands for

(a) PolyPeptide Linked Organisms
(b) PleuroPneumonia Like Organisms
(c) Polynucleotide Phosphate containing Living Organisms
(d) none of these

9. **Little leaf disease in Brinjal is caused by**

(a) virus (b) bacteria (c) Mycoplasma (d) fungus

10. **Cell wall of bacteria is very resistant due to**

(a) thick cellulose fibres (b) chitin
(c) acetyl muramic acid complex (d) sugars

11. **The chemosynthetic and photosynthetic bacteria are**

(a) heterotrophs (b) autotrophs (c) saprophytes(d) parasites

12. **Laderberg and Tatum discovered the process of**

(a) asexual reproduction in bacteria (b) genetic recombination in bacteria (c) photosynthesis in bacteria (d) multiplication in bacteria

13. **Prokaryotes have**

(a) incipient nuclei (b) true nuclei (c) no nuclei (d) all these under certain conditions

14. **Mycoplasma has**

(a) a thick cell wall (b) no cell wall (c) no plasma membrane (d) no DNA

15. **The symbiotic bacterium that fixes nitrogen is**

(a) Nitrobacter (b) Azatobacter
(c) Rhizobium (d) Clostridium

16. **Chlorosis and vein clearing disease are caused by**

(a) bacteria (b) viruses (c) Mycoplasma (d) fungus

17. **The blue pigment found in Oscillatoria is called**

(a) phycoerythrin (b) phycobilin
(c) phycocyanin (d) chlorophyll a

18. **When a bacteriophage comes in contact with the host cell**

(a) entire virus body enters the host cell (b) only the protein part of it enters the host cell (c) only its DNA enters the host cell (d) it refuses to enter the host cell

19. **When the virus is outside the host cell, it**

(a) rapidly multiplies (b) respires
(c) is inert (d) shows all the life activities

20. **Viruses are regarded as**

(a) organisms (b) living entities
(c) nonliving things (d) none of these

21. **Cyanophage is the virus that infects the**

(a) green algae (b) bacteria (c) blue-green algae (d) all these

22. **Members of Cyanophyta are**

(a) true algae (b) eukaryotes (c) prokaryotes (d) all these

23. Respiratory enzymes in bacteria are located

(a) inside the mitochondria (b) on the cell wall
(c) on the plasma membrane (d) thorough-out the protoplasm

24. Nature's 'Scavengers' are

(a) viruses (b) Mycoplasma (c) blue-green algae (d) bacteria

25. Some blue-green algae increase the fertility of soil because they

(a) loosen the soil (b) offer themselves as food for crops
(c) fix nitrogen in the soil (d) kill weeds

26. Hexose sugars are converted into alcohol by

(a) Spirogyra (b) Mucor (c) Saccharomyces (d) Mycoplasma

27. During dikaryotization, ___ takes place.

(a) karyogamy (b) pairing of cells (c) somatogamy (d) all these

28. Penicillin was discovered by

(a) Leeuwenhoek (b) Robert Hooke (c) Koch (d) Alexander Flemming

29. The prothallus is

(a) sporophytic plant of a fern (b) undifferrentiated thallus
(c) gametophyte of a fern (d) heart shaped alga

30. The sporophytic plant body of a fern is ____ in nature.

(a) tetraploid (b) haploid (c) diploid (d) none of these

31. Plasmogamy is the fusion of

(a) gametes (b) plasma membrane
(c) plasmodial gametes (d) two protoplasts

32. Gymnosperm member.Cycas produces

(a) seeds (b) naked seeds (c) corolloid roots (d) all these

33. The largest ovule in the whole of plant kingdom is produced by

(a) Pinus (b) Coconut (c) Cycas (d) Borassus

34. Largest sperms in the plant kingdom are produced by

(a) Nephrolepis (b) Banyan tree (c) Cycas (d) Pinus

35. Presence of ramenta, circinnate vernation and dichotomously branched veins are the features of

(a) ferns (b) gymnosperms (c) angiosperms (d) all these

36. Girdling leaf traces are found in the stem of

(a) Nephrolepis (b) Coconut palm (c) Cycas palm (d) all these

37. Cycas palm is

(a) monoecious (b) dioecious
(c) sometimes monoecious and sometimes dioecious (d) none of these

38. Pollen chamber is a structure in Cycas found in

(a) the pollen grains (b) microsporophyll
(c) the ovule (d) the microsporangium

39. The basidiocarp is the fruiting body of

(a) a mushroom (b) Rhizopus (c) yeast (d) none of these

40. The pigment phycoerythrin is found in

(a) Sargassum (b) Spirogyra
(c) Batrachospermum (d) Rhizopus

41. The furiting body of Batrachospermum is called as the

(a) basidiocarp (b) carpocyst (c) cystocarp (d) none of these

42. The carpospore germinates to produce a

(a) new plant body of Batrachospermum (b) a cystocarp
(c) chantransia stage (d) none of these

43. The gonimoblast filaments produce

(a) carpospores (b) spermatia (c) monospores (d) all these one after the other

44. Monospores are produced by

(a) male filaments of Batrachospermum (b) female filaments of Batrachospermum (c) juvenile form (d) cystocarp

45. Sexually reproducing bodies in Sargassum are

(a) receptacles (b) conceptacles
(c) Antheridia and oogonia (d) all these

46. The gymnosperm differs from an Angiosperm in having a___endosperm

(a) diploid (b) triploid (c) haploid (d) polyploid

47. The prominent pigment present in Saragassum is

(a) xanthophyll (b) chlorophyll a (c) fucoxanthin (d) phycoxanthin

48. Batrachospermum differs from other red algae in being

(a) a marine form (b) a fresh water form
(c) both fresh and marine form (d) none of these

49. Mannitol and Laminarin are the reserve food materials found in

(a) Saragassum (b) Batrachospermum
(c) Polytrichum (d) Oscillatoria

50. DNA in bacterium is

(a) single stranded (b) rectangular
(c) circular (d) linear

51. The peristomial teeth are found in

(a) sorus of Nephrolepis (b) capsule of polytrichum
(c) conceptacles of Sargassum (d) megasporophyll cycas

52. The important feature of corolloid root in Cycas is the presence of

(a) triarch xylem (b) parenchymatous cortex
(c) algal zone in the cortex (d) corolloid appearance

53. The girdling leaf traces are found in

(a) stem in Nephrolepis (b) stem of Hibiscus
(c) stem of Cycas (d) stem of Coconut palm

54. A fungus differs from an alga in

(a) having chlorophyll (b) lacking chlorophyll
(c) having small nuclei (d) none of these

55. Zygosporangium is produced in

(a) Yeast (b) Sargassum (c) Spirogyra (d) Rhizopus

56. Haplodiplobiontic life cycle is observed in

(a) saccharomycodes ladwigii (b) Schizosaccharomyces octosporus
(c) Saccharomyces cerevisiae (d) none of these

57. The rhizomorph is

(a) an aggregation of primary mycelium (b) a thick aggregation of secondary mycelium (c) a mixture of both primary and secondary mycelium (d) a rhizome found in ginger

58. Fertilization in Sargassum takes place

(a) within the female conceptacle (b) outside the female conceptacle (c) within the cryptoblasts (d) all these

59. Protonema is a part of

(a) Sporophyte (b) Gametophyte (c) an intermediate structure in moss plant (d) none of these

60. Ovule in Cycas is

(a) anatropous (b) orthotropous (c) circinotropous
(d) hemianatropous

61. Sorus in Nephrolepis is of a

(a) gradate type (b) mixed type
(c) intermediate type (d) none of these

62. Capsule of sporangium in Nephrolepis is

(a) biconcave is shape (b) biconvex in shape
(c) flat (d) none of these

63. The hygroscopic structure found in the sporangium of Nephrolepis is

(a) the stomium (b) the spore mother cells
(c) annulus (d) stalk

64. Antibiotics are obtained from

(a) algal members (b) fungal members (c) Bacteria (d) Mycoplasmas

65. Rabies and measles are caused by

(a) bacteria (b) Mycoplasma
(c) viruses (d) parasitic fungal members

66. Xanthomonas citri causes a

(a) viral disease (b) fungal disease
(c) bacterial disease (d) Mycoplasma disease

67. The largest bacterial cell is a ___ type.

(a) bacillus (b) coccus (c) comma (d) Spirillum

68. The sterilization process of milk, surgical instruments etc.

was developed by

(a) Robert Koch (b) Lister (c) Luis Pasteur (d) Leeuwenhock

69. **Which of the following statements is correct?**

(a) A hypha is a collection of mycelium (b) A mycelium is the collection of cellulose fibres (c) A mycelium is the collection of hyphae (d) A mycelium is the collection of cilia

70. **A pseudomycelium is seen in**

(a) Rhizopus (b) Agaricus (c) Saccharomyces (d) none of these

71. **Which of the following is the baker's yeast?**

(a) Schizosaccharomyces octosporus (b) Saccharomyces cerevisiae (c) Saccharomycodes ludwigii (d) all these

72. **Which of the following statements is correct?**
Archegonia in Cycas are

(a) not produced (b) produced (c) some times produced (d) none of these

73. **The calyptra in moss is a part of**

(a) sporophyte (b) gametophyte
(c) protonema (d) none of these

74. **Acetic acid bacteria are used in the manufacture of**

(a) lactic acid (b) alcohol (c) vineger (d) all these

75. **A ___ is a taxon.**

(a) species (b) genus (c) family (d) all these

76. **Who is called "the father of taxonomy" ?**

(a) Darwin (b) Aristotle
(c) Carolus Linnaeus (d) Mendel

77. **ICBN stands for**

(a) International Committee for Botanical Nomenclature
(b) Indian Code for Binomial Nomenciature
(c) International Code for Botanical Nomenclature
(d) International Code for Biological Nomenclature

78. **A runner is**

(a) a subaerial stem modified (b) an underground stem modified
(c) an aerial stem modified (d) none of these

79. **Chion is a**

(a) bulbil (b) bulb (c) an underground structure called a tuber
(d) rhizome

80. **Agave plant produces the vegetatively propagating structures called**

(a) bulbs (b) bulbils (c) asexual buds (d) stem tubers

81. **A phylloclade is a modified**

(a) stem (b) leaf (c) root (d) none of these

82. **Which of the following statements is correct?**

(a) An epiphyte depends on other plant just for support

(b) An epiphyte grows on other plants and absorbs only water
(c) An epiphyte grows on other plants and draws only nourishment
(d) None of the above

83. The plant Cuscuta

(a) is a parasite (b) draws water from the host (c) draws food materials from the host (d) all these

84. Phyllotaxy is the

(a) arrangement of sepals and petals in a flower (b) taxonomy of leaves (c) mode of arrangement of leaves on the stem (d) classification of leafy plants

85. The root differs from the stem in

(a) growing into the soil (b) showing the absence of nodes and internodes (c) having apical meristem (d) producing lateral branches

86. The Sunflower is

(a) a large flower (b) an inflorescence (c) a flower that faces the Sun always (d) all these

87. A phyllode is a modified

(a) stem (b) root (c) leaf (d) none of these

88. Allium cepa has

(a) colourless, concentric and storage leaves (b) scaly leaves
(c) green, cylindrical hallow leaves (d) all these

89. Which of the following is vegetatively reproduced through leaves?

(a) Hibiscus (b) Roses (c) Bryophyllum (d) Crotalaria

90. Stem tubers are produced in

(a) sweet potato (b) potato (c) tomato (d) Asparagus

91. Turmeric plant has a

(a) tuber (b) bulb (c) bulbil (d) rhizome

92. The accessory organs of the flower are

(a) calyx and androecium (b) corolla and gynoecium
(c) calyx and corolla (d) corolla and androecium

93. The exalbuminous seeds have

(a) endosperm (b) cotyledons (c) no endosperm (d) a little endosperm

94. Pappus is a

(a) reduced corolla (b) reduced hairy calyx (c) poppy plant
(d) tiny flower

95. A zygomorphic flower is always

(a) regular (b) irregular (c) asymmetrical (d) none of these

96. Cleistogamous flower is one which

(a) blooms early (b) blooms later
(c) opens always for pollination (d) will never open at all

97. A pistillode is a

(a) fertile stamen (b) fertile gynoecium
(c) sterile pistil (d) none of these

98. Anthers are fertile in

(a) stamens (b) staminodes (c) all monocots (d) all these

99. In an epipetalous condition, the

(a) petals are on the sepals (b) petals are free above
(c) stamens are on the petals (d) petals are on the stamens

100. The epicalyx is nothing but

(a) the presence of calyx on the thalamus (b) the presence of petals on the calyx (c) a whorl of bracteoles on the calyx
(d) none of these

101. Inflorescence in Euphorbia is

(a) verticillaster (b) thyrsus
(c) cyathium (d) simple raceme

102. Hypanthodium inflorescence is seen in

(a) Leucas (b) Jack tree (c) Ficus (d) Salvia

103. The syngenesious anthers are seen in

(a) Crotalaria (b) Cassia (c) Solanum (d) disc floret of sunflower

104. The Helicoid and Scorpioid inflorescences are the two types of

(a) dichasial cyme (b) polychasial cyme
(c) monochasial cyme (d) racemose type

105. The centripetal mode of development of flowers is seen in

(a) special types of inflorescence (b) cymose type of inflorescence
(c) racemose type of inflorescence (d) all these

106. Cleistogamous flowers avoid ___ pollination.

(a) self (b) cross (c) insect (d) none of these

107. Anemophily is the pollination by

(a) wind (b) animals (c) birds (d) all these

108. The largest flower of about 3 ft in diameter is produced by

(a) Feronia elephantum (b) Rafflesia
(c) giant trees of California forests (d) big banyan tree

109. Dichogamy is an adaptation in some plants where.

(a) male and female flowers are produced separately in the same plant (b) androecium and gynoecium mature at different times in a bisexual flower (c) male and female flowers are produced on different plants (d) none of these

110. Dicliny is ___ of flowers.

(a) bisexuality (b) unisexuality (c) neutrality (d) none of these

111. Porogamy means

(a) the presence of a pore in a gamete (b) entry of the pollen tube through the micropyle to fertilize (c) exit of the pollen tube through one of the germ pore of a pollen grain (d) noneofthese

112. Monadelphous condition of stamens is the presence of

(a) a single stamen in a flower (b) many stamens in a bundle
(c) many free stamens in a flower (d) none of these

113. Majority of angiosperms show ___ ovules.

(a) orthotropous (b) anatropous (c) amphitropous (d) campylotropous

114. Lever mechanism is observed in

(a) sago palm (b) sage plant (c) Solanum (d) Leucas

115. Mesogamy is observed in

(a) beans (b) grapes (c) cucurbits (d) grasses

116. The cross pollination is preferred in nature because of

(a) a better progeny (b) fruit formation
(c) seed formation (d) insects

117. Pome is a ___ fruit.

(a) true (b) dry (c) spurious (d) schizocarpic

118. Berry differs from drupe in having a

(a) fleshy pericarp (b) hard endocarp
(c) fibrous mesocarp (d) none of these

119. The Coconut is a

(a) dry fruit (b) nut (c) drupe (d) regma

120. The fleshy fruit called Pepo shows ___ placentation.

(a) an axile (b) a marginal (c) a parietal (d) a free central

121. A simple raceme differs from a spike inflorescence in having ___ flowers.

(a) sessile (b) pedicellate (c) bisexual (d) unisexual

122. In a heterochlamydeous flower.

(a) perianth lobes are distinct (b) calyx and corolla are distinct
(c) androecium and gynoecium are distinct (d) two whorls of perianth are distinct

123. Ascendingly imbricate aestivation is seen in

(a) Crotalaria (b) Cassia (c) Casuarina (d) Carissa

124. Date fruits are obtained from

(a) Areca catechu (b) Phoenix sylvestris
(c) Phoenix dactylifera (d) Metroxylon sago

125. Sago is obtained commercially from

(a) Cycas palm (b) Metroxylon rumphii
(c) Borassus flabellifer (d) Phoenix sylvestris

126. Toddy palm is

(a) Phoenix dactylifera (b) Cycas circinalis
(c) Phoenix sylvestris (d) none of these

127. Citrus fruits are technically called as

(a) pepo (b) pome (c) hespiridium (d) berry

128. In an epigynous flower the ovary is

(a) superior (b) semisuperior (c) inferior (d) none of these

129. The units of Perianth are

(a) petals (b) sepals (c) tepals (d) none of these

130. The botanical name for ground nut is

(a) Achras sapota (b) Artimissia antidysentrica
(c) Arachis hypogea (d) Areca catechu

131. Which of the following statements is correct?

(a) A monoecious plant produces male and female flowers on separate individuals (b) A monoecious plant produces both male and female flowers (c) A monoecious plant does not produce the flowers (d) none of these

132 Cruciform corolla is found in

(a) Hibiscus (b) Brassica (c) Crotalaria (d) Sunflower

133. The botanical name for garlic is

(a) Allium cepa (b) Allium sativa (c) Alocasia (d) Alfalfa

134. The plant 'Aswagandhi' is botanically called as

(a) Solanum melongena (b) Capsicum
(c) Lycopersicon (d) Withania somnifera

135. The Cypsella is a characteristic fruit of the family

(a) Papilioneceae (b) Malvaceae
(c) Compositae (d) Solanaceae

136. Chrysanthemum shows a ___ inflorescence.

(a) heterogamous head (b) homogamous head
(c) simple recemose (d) special type of

137. The giant trees in the plant kingdom belong to

(a) Angiosperms (b) Gymnosperms (c) Pteridophytes (d) Monocots

138. In a schizocarpic fruit.

(a) seeds are shed at once the fruit dehisces (b) seeds are shed at the second order of fruit dehiscence (c) seeds are not shed (d) none ofthese

139. In a polygamous plant, ___ flowers are produced.

(a) unisexual (b) bisexual (c) neutral (d) all these

140. The whorl of bracts present in head inflorescence is called as

(a) epicalyx (b) spathe (c) involucre (d) calyx whorl

141. The sessile, bisexual flowers are arragned in an acropetal manner on an elongated main axis in

(a) simple raceme (b) spadix (c) catkin (d) spike

142. If in a flower, other floral parts arise from below the level of the ovary, it is called ___ flower.

(a) an epigynous (b) a hypogynous (c) a perigynous (d) none of these

143. An achlamydeous flower has

(a) calyx (b) corolla (c) both calyx and corolla (d) none of these

144. The egg apparatus consists of

(a) egg and the antipodals (b) egg and the secondary nucleus
(c) egg and the synergids (d) antipodals and the synergids

145. Double fertilization was discovered by

(a) Strassburger (b) Nawaschin (c) G.B. Amici (d) none of these

146. The secondary nucleus is

(a) haploid (b) triploid (c) diploid (d) tetraploid

147. Endosperm in an Angiosperm seed is normally

(a) diploid (b) haploid (c) tetraploid (d) triploid

148. The awakening of the dormant embryo of seed into a seedling is called

(a) propagation (b) sprouting (c) germination (d) morphogenesis

149. The floral diagram represents the

(a) position of flower in the plant body (b) diagrammatic representation of the floral characters (c) various colours of the different floral parts (d) the shape of the flower

150. A unitegmic ovule has

(a) both testa and tegmen (b) only tegmen
(c) only testa (d) only one integument

1A. ORIGIN OF LIFE

1. **Who is the author of the book 'origin of life'?**
   (a) Darwin (b) Oparin (c) Haldane (d) Aristotle
2. **The very first life came into existence**
   (a) on land (b) under the soil (c) in water (d) in air
3. **Which of the following gases were present in the atmosphere of the primordial earth?**
   (a) Methane, ammonia, water and oxygen
   (b) Oxygen, hydrogen, carbondioxide
   (c) Methane, ammonia, hydrogen and cyanogen
   (d) Methane, ammonia, water, cyanogen and hydrogen
4. **The origin of life on earth can be traced to**
   (a) micro organisms (b) creative Power of God
   (c) some chemicals formed on the primitive earth
   (d) none of these
5. **Panspermia are**
   (a) bacteria (b) yeast (c) viruses (d) life spores
6. **Abiogenesis means the origin of life from**
   (a) viruses (b) bacteria (c) non-living things (d) none of these.
7. **Biogenesis means the origin of life from**
   (a) viruses (b) bacteria (c) pre-existing life (d) none of these
8. **The theory of genesis proposes that the life and the world was created by**
   (a) witches (b) God (c) scientists (d) magicians
9. **Cosmozoic theory was propounded by**
   (a) Pasteur (b) Miller (c) Richter (d) None of these
10. **Which one of the following planets is supposed to support life?**
    (a) Mercury (b) Mars (c) Neptune (d) Jupiter
11. **Which one of the following was most likely absent in the primordial atmosphere?**
    (a) Methane (b) Ammonia (c) Oxygen (d) Hydrogen
12. **Life came into existence on earth due to**
    (a) cosmozoa (b) will of God (c) spontaneous generation (d) none of these

13. **Which one of the following is an acceptable theory of origin of life?**
(a) Theory of panspermia (b) Physico Chemical theory (c) Theory of abiogenesis (d) Theory of biogenesis

14. **Which of the following scientists proved the production of amino acids under possible primitive earth conditions?**
(a) A.I.Oparin (b) Stanley Miller (c) Francesco Redi (d) Spallanzani

15. **'Swan necked' flask experiments were conducted by**
(a) Oparin (b) Pasteur (c) Miller (d) none of these

16. **The idea of spontaneous generation was first refuted by**
(a) Aristotle (b) Pasteur (c) Spallanzani (d) None of these

17. **Francesco Redi was the first to refute the theory of**
(a) spontaneous generation (b) special creation (c) biogenesis (d) none of these

18. **The principles of sterilization is based upon the experiments of**
(a) Francesco Redi (b) Louis Pasteur (c) Stanley Miller (d) none of these

19. **Cell like structures which were supposed to have come into existence in the primitive oceans are called**
(a) Protovirus (b) Protists (c) Coacervates (d) none of these

20. **There is no life on moon because there is no**
(a) oxygen (b) carbon (c) nitrogen (d) water

21. **Miller's experiment supports the theory of**
(a) biogenesis (b) abiogenesis (c) physico chemical theory (d) none of these

22. **The first sign of life on the primordial earth was the formation of**
(a) sugars (b) lipids (c) Aminoacids (d) none of these

23. **An experiment to prove that 'organic compounds are the basis of life' was conducted by**
(a) Melvin (b) Darwin (c) Miller (d) Haldane

24. **Nebular hypothesis was propounded by**
(a) Immanual Kant (b) Macreas (c) Nelson (d) Davidson

25. **Nebular theory is concerned with**
(a) Origin of life (b) Origin of earth (c) Origin of mankind (d) none of these

26. **The nucleoprotein molecules in the ancient oceans marked the begining life because they were capable of**
(a) nutrition and biosynthesis (b) growth and replication (c) adoptation and mutation (d) all of these

27. **Under which of the following conditions were the organic compounds formed on the primordial earth?**
(a) Availability of gases like Methane, Ammonia, Hydrogen and its compounds
(b) Availability of water and energy
(c) Reducing and Sterile atmosphere
(d) All the above

28. **An important event in the origin of life seems to be the formation of**
(a) nucleic acids (b) amino acids (c) proteins (d) none of these

B. ORGANIC EVOLUTION

1. **Who is the author of the famous book 'Origin of Species'?**
   (a) Calvin (b) Darwin (c) Watson (d) Nelson
2. **Doctrine of evolution is concerned with**
   (a) sudden changes (b) no changes (c) biosynthesis
   (d) gradual changes
3. **Charles Darwin wrote the famous book 'Origin of species' in the year**
   (a) 1800 (b) 1859 (c) 1895 (d) none of these
4. **Theory of 'inheritance of acquired characters' was propounded by**
   (a) Darwin (b) Lamarck (c) Wallace (d) Mendel
5. **Theory of 'natural selection' was put forward by**
   (a) Darwin (b) Lamarck (c) Mendel (d) Miller
6. **Mutation theory was put forward by**
   (a) Hugo De vries (b) Wallace (c) Malthus (d) none of these
7. **Which of the following are documentary evidences for organic evolution?**
   (a) Mutations (b) Fossils (c) Variations (d) Genes
8. **Which one of the following is a vestigial organ?**
   (a) Fore limbs of birds (b) Caecum in Rabbit (c) Third molar in man (d) none of these
9. **Which one of the following is an example for straightline evolution?**
   (a) Evolution of man (b) Evolution of horse (c) Evolution of dog (d) none of these
10. **Theory of recapitulation was called the biogenetic law by**
    (a) Linnaeus (b) Haeckel (c) Haldane (d) none of them
11. **Which of the following sets represent the vestigial structures in man?**
    (a) Hair, Vermi form appendix and coccyx (b) Coccyx, earmuscles and patella (c) Coccyx, appendix and earmuscles (d) none of these
12. **Which of the following scientists showed that "Lamarck's acquired characters" are not inherited?**
    (a) Darwin (b) Wallace (c) Weisemann (d) Watson

13. **The use and disuse principle of evolution was proposed by**

(a) Malthus (b) Darwin (c) Lamarck (d) none of them

14. **Which of the following concepts is attributed to Charles Darwin?**

(a) Theory of mutation (b) Theory of genesis (c) Survival of the fittest (d) none of these

15. **Haeckels theory of recapitulation means that**

(a) progeny of an organism resembles its parents

(b) life history of an animal reflects its evolutionary history

(c) all organisms are formed from a zygote

(d) none of these

16. **On which of the following principles is Darwin's theory of natural selection based?**

(a) Appearance of sudden structural changes, their inheritance and survival

(b) Modification of organs by use and disuse

(c) Prodigality of Production, struggle for existance and survival of the fittest

(d) None of these

17. **Homologous organs are**

(a) similar in behaviour (b) similar in origin (c) similar in function (d) none of these

18. **Analogus organs are**

(a) similar in behaviour (b) similar in origin

(c) similar in function (d) none of these

19. **Vestigial organs are**

(a) large and non functional (b) small and functional

(c) non functional and reduced (d) similar in structure and function

20. **Darwin travelled in a ship called**

(a) Vikrant (b) HMS Beagle (c) Philips (d) none of them

21. **The study of fossils is called**

(a) Pedology (b) Paleaontology (c) Ichthyology (d) none of these

22. **Fossil is a**

(a) museum specimen (b) stuffed animal

(c) dead animal of the past (d) an organic relic of the past

23. **Archaeopteryx is a**

(a) fossil man (b) fossil bird

(c) fossil reptile (d) none of these

24. **Mutations are building blocks of**

(a) origin of life (b) organic evolution

(c) heredity (d) none of these

25. **Variations are raw materials for**

(a) heredity (b) evolution

(c) origin of life (d) none of these

26. **The process of formation of new species is called**

(a) origin of life (b) speciation

(c) reproduction (d) none of these

27. **The modern theory of evolution is called**

(a) Darwinism (b) Neo Darwinism

(c) Lamarckism (d) none of these

28. **Neo Darwinism is a combination of**

(a) Darwinism & Lamarckism

(b) Darwinism and pre-formation theory

(c) Darwinism and paleaontology

(d) none of these

29. **A combination of Darwinism and gene mutation is called**

(a) Darwinism (b) Neo Darwinism

(c) Lamarckism (d) All of them

30. **The role of isolation in evolution is**

(a) maintenance of species (b) extermination of species

(c) evolutionary divergence (d) differentiation of species

31. **Fossilisation takes place when**

(a) organisms are destroyed by the environment

(b) organisms are buried by natural processes

(c) animals are buried by man

(d) none of these

32. **The ultimate source of organic evolution is**
(a) mutations (b) sexual reproduction
(c) natural selection (d) none of these

33. **Fossils are dated by**
(a) stratigraphic position (b) amount of calcium residu
(c) radioactive carbon contents (d) none of these

34. **Which one of the following has become extinct recently**
(a) Archaeopteryx (b) Lingula (c) Dodo (d) Sphenodon

35. **Appearance of ancestral characters such as multiple mamma tail, etc in newborn babies is known as**
(a) homologus (b) atavstic (c) analogus (d) vestigial

36. **Which were the dominant animals in the Mesozoic era?**
(a) Fishes (b) Amphibians (c) Reptiles (d) Mammals

2. ECOLOGY

1. **The term ecology was proposed by**
(a) Clark (b) Odum (c) Tansley (d) None of these

2. **An ecosystem**
(a) deals with animals and their environment
(b) deals with plants and their environment
(c) is the collection of all the biotic factors of a given are together with their interactions with the abiotic factor of that area
(d) none of these

3. **All living organisms of an ecosystem form**
(a) abiotic components (b) biotic components
(c) both of these (d) neither (a) nor (b)

4. **Non-living substances of an ecosystem form**
(a) abiotic components (b) biotic components
(c) both of these (d) neither (a) nor (b)

5. **The primary source of energy in an ecosystem is**
(a) glucose (b) protein (c) lipid (d) sunlight

6. **Producers are also known as**
   (a)autotrophs (b) heterotrophs
   (c) parasites (d) none of these
7. **Organisms which cannot prepare their food and hence depend on the producers for their food requirements are called**
   (a) parasites (b) saprophytes
   (c) consumers (d) none of these
8. **Bacteria and Fungi are examples for**
   (a) producer (b) primary consumer
   (c) secondary consumer (d) none of these
9. **Herbivore is a**
   (a) producer (b) primary consumer
   (c) seondary consumer (d) none of these
10. **A frog which feeds on an insect is an example for**
    (a) primary consumer (b) primary carnivore
    (c) secondary carnivore (d) none of these
11. **A cat which feeds on a rat is a**
    (a) herbivore (b) carnivore
    (c) omnivore (d) none of these
12. **A cat which feeds on a rat is also an example for**
    (a) producer (b) decomposer
    (c) secondary consumer (d) none of these
13. **A snake which feeds on a frog is an example for**
    (a) primary consumer (b) secondary consumer
    (c) tertiary consumer (d) none of these
14. **All heterotrophs in an ecosystem depend on**
    (a) producers (b) decomposers
    (c) both of them (d) none of them
15. **A big fish while feeds on a small fish is an example for**
    (a) primary consumer (b) secondary consumer
    (c) tertiary consumer (d) none of these
16. **A plant eaten by a herbivore which in turn is eaten by a carnivore is an example for**
    (a) struggle for existence (b) survival of the fittest
    (c) food chain (d) food web
17. **Green plants are**
    (a) heterotrophs (b) phototrophs
    (c) chemotrophs (d) none of these

18. **Pond is a**
(a) natural ecosystem (b) artificial ecosystem
(c) biome (d) none of these

19. **Forest is an example for**
(a) terrestrial ecosystem (b) habitat
(c) aquatic ecosystem (d) none of these

20. **The importance of ecosystem lies in**
(a) cycling of nutrients (b) flow of energy
(c) both of these (d) neither (a) nor (b)

21. **Which one of the following is an edaphic factor?**
(a) Temperature (b) Wind (c) Rainfall (d) Soil

22. **A whole community of interlinked living things constitutes the**
(a) food chain (b) food web
(c) food production (d) none of these

23. **The tiny free floating plants in a pond constitute**
(a) aquatic weeds (b) phytoplankton
(c) zooplankton (d) none of these

24. **The tiny free swimming animals on the surface of water constitute**
(a) aquatic animals (b) zooplankton
(c) plankton (d) none of these

25. **A food chain consisting of producer, prey and predator is called**
(a) parasitic chain (b) saprophytic chain
(c) predator chain (d) none of these

26. **A parasitic chain consists of**
(a) prey and predator (b) dead matter and decomposers
(c) both of these (d) neither (a) nor (b)

27. **Symbiosis means**
(a) interaction (b) independent living
(c) interdependence (d) none of these

28. **Living together is called**
(a) parasitism (b) symbiosis
(c) saprophytic (d) none of them

29. **An ecological pyramid is**
(a) a graphic representation of the abiotic factors
(b) a graphic representation of the food web
(c) a graphic representation of nutritional relationships and energy flow from one trophic level to another through a food chain
(d) None of these

30. **Construction of ecological pyramids was suggested by**
(a) Tansley (b) Etton (c) Odum (d) Clark

31. **The total dry weight of an organism per unit area in an ecosystem is called**
(a) biosphere (b) biomass (c) biotic factor (d) none of these

32. **What type of forests are abundant in Karnataka?**
(a) Coniferous (b) Deciduous (c) Evergreen (d) None of these

33. **What type of forests are found near the equator?**
(a) Coniferous (b) Tropical rain (c) Deciduous
(d) None of these

34. **How many horizons does the soil have?**
(a) 3 (b) 4 (c) 6 (d) None of these

35. **Which one of the following horizons is called the subsoil?**
(a) A (b) B (c) C (d) D

36. **Which one of the following horizons is called the Topsoil?**
(a) B (b) C (c) D (d) None of these

37. **Damage and removal of topsoil is called**
(a) soil conservation (b) soil erosion (c) both of these
(d) neither (a) nor (b)

38. **Soil erosion by water could be in the form of**
(a) sheet erosion (b) rill erosion (c) gully erosion
(d) all these types

39. **Which one of the following is employed in soil conservation?**
(a) deforestation (b) reforestation (c) overgrazing
(d) all these

40. **Sand dunes are formed due to**
(a) sand drifting by wind (b) sand drifting by water
(c) both of these (d) neither (a) nor (b)

41. **Which of the following soil types are good for plant growth?**
(a) Sand (b) Clay (c) Loam (d) All these

42. **Humus is present in**
(a) parent soil (b) sub soil (c) top soil (d) all these

43. **One of the most serious causes of soil erosion in our country is**
(a) reforestation (b) deforestation (c) overgrazing
(d) none of these

44. **Recycling of minerals is done by**
(a) Algae (b) Fungi (c) Bacteria (d) Viruses

45. **Growing of plants in alternate rows is called**
(a) crop rotation (b) strip cropping (c) contour farming
(d) none of these

46. **Study of soil is called**
(a) Paleaontology (b) Pedology (c) Physiology (d) none of these

47. **Wild life of our country is threatened by**
(a) deforestation (b) indescriminate poaching (c) environmental pollution (d) all of them

48. **Wild life protection act was passed by the Govt of India in the year**
(a) 1927 (b) 1972 (c) 1975 (d) 1985

49. **Which of the following animals are declared as protected animals in India?**
(a) Lion and tiger (b) Rhino ceros (c) All of them
(d) None of them

50. **Residues of the things we make use of and throw away are called**
(a) pollutants (b) repellents (c) both pollutant and repellent
(c) neither pollutant nor repellent

51. **Pollutants which increase natures capacity to decompose and recycle are called**
(a) non degradable (b) biodegradable (c) neutral
(d) none of these

52. **Which one of the following is a synthetic pollutant?**
(a) Mercury (b) Lead (c) Detergents (d) None of these

53. **Which of the following is a nondegradable pollutant?**
(a) DDT (b) Debris of Living organisms (c) Both these (d) none of them

54. **Discharge of domestic wastes and sewage causes**
(a) organic pollution (b) siltation (c) industrial pollution (d) none of these

55. **Industrial pollution means**
(a) pollution of industries (b) pollution caused by industries (c) both these (d) neither (a) nor (b)

56. **Smog is a**
(a) water pollutant (b) air pollutant (c) noise pollutant (d) none of these

57. **Eutrophication is the result of**
(a) severe organic pollution (b) industrial pollution (c) radioactive fallout (d) none of these

58. **Eutrophication results in the reduction of**
(a) mineral salts (b) dissolved hydrogen (c) dissolved oxygen (d) none of these

59. **Photochemical smog causes**
(a) water pollution (b) air pollution (c) noise pollution (d) all these

60. **What is B.O.D?**
(a) Basic Oxygen Demand (b) Biochemical Oxygen Demand (c) Biochemical Oxygen Deficit (d) None of these

61. **Radioactive fallouts produced by the atomic explosion cause**
(a) organic and soil pollution (b) air and water pollution (c) all of these (d) none of these

62. **Water pollution could be controlled by**
(a) killing the aquatic fauna (b) constructing septic tanks and filter beds (c) closing the factories (d) none of these

63. **Accumulation of nondegradable pollutants in the tissues of animals leads to**
(a) an increase in size (b) biological magnification (c) both these (d) neither (a) nor (b)

64. **Siltation is responsible for**
(a) air pollution (b) soil pollution
(c) water pollution (d) none of these

65. **Allergic diseases in man are caused due to**
(a) noise pollution (b) soil pollution
(c) air borne pollutants (d) all these

66. **Which one of the following affects the oxygen holding capacity of water?**
(a) Detergents (b) Algal bloom
(c) Thermal pollution (d) None of these

67. **Inhaling of air containing SO_3 causes damage to**
(a) ears (b) eyes (c) heart (d) lungs

68. **DDT is a**
(a) biodegradable pollutant (b) non degradable pollutant
(c) natural pollutant (d) none of these

69. **Which one of the following is responsible for pollution?**
(a) Industrialisation (b) Urbanization
(c) Population explosion (d) All these

3. METABOLITES, P^H AND TRANSPORT ACROSS MEMBRANES

1. **Proteins are made up of**
(a) carbon and hydrogen (b)oxygen and nitrogen
(c) all of these (d) neither (a) nor (b)

2. **Building blocks of proteins are**
(a) nucleic acids (b) amino acids
(c) steroids (d) none of these

3. **Amino acids are**
(a) acidic (b) alkaline
(c) amphoteric (d) none of these

4. **The linkage between aminoacids to form a protein molecule is called**
(a) glycosidic bond (b) complementary pairing
(c) peptide bond (d) none of these

5. **If three aminoacids are linked together, it is called**
(a) peptide bond (b) dipeptide bond
(c) tripeptide bond (d) polypeptide bond

6. **The aminoacids required by the body cells which cannot be manufactured by the cells are called**
(a) synthetic aminoacids (b) essential aminoacids
(c) non essential aminoacids (d) none of these

7. **Which of the following are essential aminoacids?**
(a) Alanine (b) Argenine (c) Aspartic acid (d) None of these

8. **Hydrolysis of simple proteins yields**
(a) aminoacids (b) aminoacids and prosthetic groups
(c) none of these (d) both (a) and (b)

9. **If a protein molecule is united with a prosthetic group, it is called a**
(a) derived protein (b) conjugated protein
(c) simple protein (d) none of these

10. **Which of the following is a simple protein?**
(a) Albumins (b) Globulins
(c) Protamines (d) All of them

11. **Nucleo proteins are examples for**
(a) simple proteins (b) conjugated proteins
(c) derived proteins (d) none of these

12. **Which of the following is a derived lipid?**
(a) Phosphoprotein (b) Peptone
(c) Proline (d) Phenyl alanine

13. **Actin and myosin are**
(a) plasma proteins (b) derived proteins
(c) muscle proteins (d) none of these

14. **Haemoglobin is a**
(a) carrier protein (b) structural protein
(c) contractile protein (d) none of these

15. **Haemoglobin is held by the plasma in**
(a) man (b) bird (c) fish (d) earthworm

16. **Iron free compound of haemoglobin is called**
(a) bilivirdin (b) biluribin
(c) globin (d) haematin

17. **Which of the following metobolites contain nitrogen?**
(a) lipids (b) carbohydrates
(c) proteins (d) all these

18. **Partial hydrolysis of natural proteins yields**
(a) amino acids (b) peptones
(c) conjugated proteins (d) none of these

19. **Kerotin is a**
(a) carrier protein (b) contractile protein
(c) structural protein (d) not a protein

20. **Insulin is a**
(a) sterol (b) protein (c) sugar (d) none of these

21. **Carbohydrates are made up of**
(a) hydrogen, oxygen and carbon (b) carbon, nitrogen & oxygen
(c) carbon, nitrogen and hydrogen (d) none of these

22. **The ratio of carbon, hydrogen and oxygen in carbohydrates is**
(a) 1:2:1 (b) 2:1:1 (c) 1:3:1 (d) 1:1:2

23. **Galactose is a**
(a) monosaccharide (b) disaccharide
(c) poly saccharide (d) none of these

24. **Erythrose is a**
(a) triose (b) tetrose (c) pentose (d) hexose

25. **Hydrolysis of sucrose yields**
(a) glucose and lactose (b) glucose and fructose
(c) glucose and maltose (d) none of these

26. **Sucrose, maltose and lactose are**
(a) monosaccharides (b) disaccharides
(c) polysaccharides (d) none of these

27. **Polysaccharides are**
(a) soluble in water (b) insoluble in water
(c) insoluble in organic solvents (d) insoluble in any liquid

28. **Chitin is**
(a) a protein (b) a carbohydrate
(c) a lipid (d) none of these

29. **Cellulose is a**
(a) structural carbohydrate (b) carrier carbohydrate
(c) both of these (d) neither (a) nor (b)

30. **Pentoses are**
(a) monosaccharides (b) disaccharides
(c) polysaccharides (d) nonsaccharides

31. **Which of the following is a pentose ?**
(a) Glucose (b) Ribose (c) Stachyose (d) None of these

32. **Which of the following is a storage carbohydrate in animal cells?**
(a) Glucose (b) Galactose (c) Glycogen (d) None of these

33. **Hydrolysis of glycogen yields**
(a) fructose (b) sucrose (c) lactose (d) glucose

34. **Liver cells store**
(a) starch (b) glucose (c) glycogen (d) none of these

35. **Glucose and fructose are**
(a) hexoses (b) heptoses (c) trioses (d) tetroses

36. **Nucleotides contain**
(a) monosaccharides (b) disaccharides
(c) poly saccharides (d) none of these

37. **Enzymes are basically**
(a) fats (b) carbohydrates (c) proteins (d) none of these

38. **Starch is a**
(a) steroid (b) protein (c) carbohydrate (d) vitamin

39. **Enzymes are built from**
(a) minerals and vitamins (b) amino acids
(c) fats (d) carbohydrates

40. **The protein which prevents coagulation of blood in the blood vessels is**
(a) fibrinogen (b) heparin (c) globulin (d) albumin

41. **Fatty acid is to fat as glucose is to**
(a) starch (b) cellulose (c) glycogen (d) all of these

42. **Cereals have high**
(a) protein content (b) carbohydrate content
(c) vitamin content (d) mineral content

43. **Hydrolysis of fats yields**
(a) fatty acids (b) glycerol
(c) both of them (d) neither (a) nor (b)

44. **Triglycerides contain**
(a) one molecule of glycerol and three molecules of fatty acids
(b) one molecule of fattyacid and three molecules of glycerol
(c) only three molecules of glycerol (d) none of these

45. **Lipids are**
(a) soluble in water (b) insoluble in water
(c) soluble in benzene (d) insoluble in ether

46. **Bee wax is an example for**
(a) simple lipid (b) compound lipid
(c) derived lipid (d) none of these

47. **Sex hormones in vertebrates are**
(a)vitamins (b) steroids (c) glycerols (d) minerals

48. **Phospholipids are**
(a) natural lipids (b) derived lipids
(c) compound lipids (d) none of these

49. **Phospholipids are the main building materials of**
(a) biological membranes (b) cell wall
(c) exoskeleton of animals (d) none of these

50. **Waxes contain**
(a) one molecule of fatty acid and one molecule of aminoacid
(b) one molecule of fatty acid and one molecule of alcoho
(c) one molecule of fatty acid and three molecules of alcoho
(d) one molecule of fatty acid and three molecules of aminoacids

51. **Who suggested the P^H scale?**
(a) Sorenson (b) Moudler (c) Bender (d) None of these

52. **The P^H of a solution is more than 7 if it is**
(a) acidic (b) alkaline (c) neutral (d) none of these

53. **The P^H of a liquid is less than 7 if it is**
(a) acidic (b) alkaline (c) neutral (d) none of these

54. **The P^H of a liquid will be 7 if it is**
(a) neutral (b) alkaline (c) acidic (d) none of these

55. **Which one of the following is a buffer?**
(a) Nitric acid (b) Hydrochloric acid
(c) Aminoacid (d) Acetic acid

56. **The most important buffer in the plasma of mammals is**
(a) sodium chloride (b) bicarbonate
(c) carbonate (d) none of these

57. **The most complex organic compounds are**
(a) proteins (b) carbohydrates (c) fats (d) none of these

58. **Fibrous proteins are those in which**

(a) the external form is long and straight

(b) the external form is long and rod shaped

(c) the external form is short

(d) the external form is spherical

59. **Which one of the following is not a fibrous protein?**

(a) Keratin (b) Myocin (c) Collagen (d) Albumin of egg

60. **Which of the following statements is correct?**

(a) An enzyme is a biocatalyst (b) All enzymes are proteins

(c) Each enzyme is a specific catalyst

(d) All these statements are correct

6 . **Urea is a nitrogenous waste, which of the following contributes the nitrogen to urea?**

(a) Lipids (b) Vitamins (c) Aminoacids (d) None of these

62. **Osmosis is defined as**

(a) loss of water from the body

(b) movement of molecules from a higher concentration to a lower concentration

(c) passage of water from a weaker solution to a stronger solution when the two are separated by a semi-permeable membrane

(d) none of these

63. **Diffusion is defined as**

(a) movement of molecules from a region of higher concentration to a region of lower concentration

(b) loss of water from the body

(c) movement of molecules from a region of lower concentration to a region of higher concentration

(d) none of these

64. **Pinocytosis refers to**

(a) ingestion of solid particles by plasma membrane

(b) ingestion of liquid particles by plasma membrane

(c) diffusion of particles through the plasma membrane

(d) none of these

65. **Phagocytosis refers to**

(a) ingestion of solid particles by plasma membrane

(b) ingestion of liquid particles by plasma membrane

(c) diffusion of particles through the plasma membrane

(d) none of these

66. **Movement of molecules during active transport is**
(a) against the concentration gradient
(b) along the concentration gradient
(c) both along and against the concentration gradient
(d) none of these

67. **The content of the blood Corpuscles are normally in an Osmotic equilibrium with the plasma. Hence the plasma is said to be**
(a) hypertonic (b) hypotonic (c) isotonic (d) none of these

68. **When RBC are kept in a concentrated salt solution, they shrink due to**
(a) exosmosis (b) endosmosis (c) turgor (d) none of these

69. **When RBC are kept in distilled water, they increase in size due to**
(a) endosmosis (b) exosmosis (c) turgor (d) none of these

70. **Diffusion is a kind of**
(a) active transport (b) passive transport
(c) phagocytosis (d) none of these

71. **Animals which maintain the concentration of their body fluids at the same level in all situations are called**
(a) osmotic animals (b) poiklosmotic animals
(c) homoiosmotic animals (d) none of these

72. **Animals which have the capacity to change the osmotic pressure of their internal fluids are known as**
(a) osmotic animals (b) poiklosmotic animals
(c) homoiosmotic animals (d) none of these

73. **Mammals sweat for**
(a) maintaining the water level in the body
(b) maintaining the salt level in the body
(c) maintaining both water and salt level in the body
(d) none of these

74. **Body temperature in mammals is regulated by**
(a) ingestion (b) egestion (c) mixturition (d) perspiration

75. **Non-protein part of a conjugated enzyme is called**
(a) holoengyme (b) apoenzyme (c) coenzyme
(d) prosthetic group

76. **Protein part of a conjugated enzyme is**
(a) holoenzyme (b) apoenzyme
(c) coenzyme (d) none of these

4. ANIMAL PHYSIOLOGY

A. Digestion

1. **Which of the following statements is correct?**
   (a) Bile is not a digestive juice
   (b) Bile does not contain digestive enzymes
   (c) Bile is secreted by the bile duct
   (d) Bile is acidic

2. **Which one of the following is a bile salt?**
   (a) Sodium chloride (b) Sodium taurocholate
   (c) Calcium chloride (d) None of these

3. **Bile is responsible for**
   (a) protein digestion (b) carbohydrate digestion
   (c) emulsification of fat (d) none of these

4. **With reference to the liver which one of the following statements is not correct?**
   (a) It is the largest digestive gland (b) It is exocrine
   (c) It secretes bile (d) It is endocrine

5. **Jaundice is a disease of the**
   (a) heart (b) kidney (c) liver (d) pancreas

6. **Bile is secreted by**
   (a) pancreas (b) liver (c) adrenals (d) none of these

7. **Bile is stored in**
   (a) urinary bladder (b) spleen (c) bileduct (d) none of these

8. **Gall bladder stores**
   (a) pancreas juice (b) hepatic juice
   (c) urine (d) none of these

9. **A substance which promotes a chemical reaction is called**
   (a) accelerator (b) inhibiter
   (c) catalyst (d) none of these

10. **The dental formula of man is**
    (a) $\frac{2123}{2123}$ (b) $\frac{1223}{1223}$ (c) $\frac{1232}{1232}$ (d) none of these

11. **Which one of the following contains erepsin?**
    (a) Salivary juice (b) Gastric juice
    (c) Intestinal juice (d) Pancreatic juice

12. **Which of the following enzymes is a carbohydrate?**
(a) Lipase (b) Invertase
(c) Thrombokinase (d) none of these

13. **Which one of the following statements is correct?**
(a) Proteins are digested in the oral cavity
(b) Proteins are digested in the stomach
(c) Carbohydrates are digested in the stomach
(d) Carbohydrates are not digested in the oral cavity

14. **Which one of the following is a part of the intestine?**
(a) Ilium (b) Ileum (c) Hilum (d) None of these

15. **Villi are present in**
(a) pancreas (b) intestine (c) kidney (d) none of these

16. **Gastrin is a**
(a) digestive juice (b) hormone
(c) enzyme (d) none of these

17. **Secretin is**
(a) an enzyme (b) vitamin
(c) a digestive juice (d) none of these

18. **Trypsinogen is a precursor of**
(a) chymotrypsin (b) renin (c) pepsin (d) none of these

19. **In the intestine of man, cellulose is digested by**
(a) protozoans (b) viruses
(c) symbiotic bacteria (d) enzymes

20. **Which of the following contains enterokinase?**
(a) salivary juice (b) gastric juice
(c) intestinal juice (d) pancreatic juice

21. **Which of the following statements is not correct?**
(a) Hepatic cells secrete bile (b) Erosions of the duodenal mucosa are ulcers (c) Diarrhoea is same as ulcers
(d) none of these

22. **Which of the following statements is not correct?**
(a) Vermiform appendix is vestigial in rabbits
(b) Pepsin is an amylatic enzyme
(c) Bile juice is acidic (d) All these

23. **Which one of the following is mismatched?**
(a) Saliva/Ptyalin (b) Gastric juice/Erepsin
(c) Gastric juice/Pepsin (d) Liver/Hepatic juice

24. **P^H range of saliva is**
(a) 6.2 to 7.4 (b) 7.4 to 8.4
(c) 4.2 to 5.2 (d) none of these

25. **Which of the following is acidic?**
(a) Saliva (b) Gastric juice
(c) Bile juice (d) Pancreatic juice

26. **The function of mucin is**
(a) to lubricate the food material
(b) to protect the mucosa of the stomach
(c) to digest starch (d) none of these

27. **The average P^H of pancreatic juice ranges from**
(a) 7.5 to 9.5 (b) 7.5 to 9.0
(c) 6.5 to 7.0 (d) 7.5 to 8.0

28. **The pancreas is**
(a) an exocrine gland (b) an endocrine gland
(c) both exocrine and endocrine (d) none of these

29. **Brunner's glands are present in**
(a) liver (b) stomach (c) large intestine (d) duodenum

30. **Digestion of food takes place by**
(a) enzymatic fermentation (b) enzymatic hydrolysis
(c) polymerisation (d) none of these

31. **Ptyalin converts**
(a) proteins into peptones (b) peptones into amino acids
(c) lipids into fatty acids and glycerol (d) starch into sugars

32. **Which of the following glands is called the metabolic mill?**
(a) Pituitary (b) pancreas (c) liver (d) spleen

33. **Trypsin is secreted by**
(a) intestinal glands (b) gastric glands
(c) pancreas (d) liver

34. **Which of the following stores glycogen?**
(a) Spleen (b) Pancreas (c) Liver (d) Salivary glands

35. **Bile salts help in**
(a) digestion of carbohdrates (b) protein digèstion
(c) emulsification of fats (d) none of these

36. **End products of carbohydrate digestion are**
(a) amino acids (b) simple sugars
(c) fatty acids & glycerol (d) none of these

37. **End products of protein digestion are**
(a) peptones (b) peptides
(c) amino acids (d) none of these

38. **Enzymes can best be classified as**
(a) proteins (b) carbohydrates
(c) lipids (d) none of these

39. **Bilirubin and Biliverdin are**
(a) bile salts (b) bile pigments
(c) enzymes (d) none of these

40. **Sodium glycocholate and sodium taurocholate are found in**
(a) blood (b) urine (c) saliva (d) bile

41. **Gastrin stimulates the secretion of**
(a) gastric juice (b) pancreatic juice
(c) bile juice (d) none of these

42. **Enterogastrone is produced by**
(a) mucosa of stomach (b) intestinal mucosa
(c) liver cells (d) none of these

43. **Enterogastrone inhibits the secretion of**
(a) intestinal juice (b) gastric juice
(c) bile (d) pancreatic juice

44. **Gastric juice is acidic due to the presence of**
(a) hydrochloric acid (b) sulphuric acid
(c) nitric acid (d) none of these

45. **Pancreatic juice is alkaline due to the presence of**
(a) traces of sodium carbonate (b) traces of sodium bicarbonate (c) traces of sodium taurocholate (d) traces of sodium glycocholate

46. **Pepsin is a**
(a) lipolytic enzyme (b) amylytic enzyme
(c) proteolytic enzyme (d) none of these

47. **Curdling of milk in the stomach is due to the action of**
(a) pepsin (b) renin (c) HCl (d) none of these

48. **Absorption of water and salts takes place in the**
(a) stomach (b) small intestine
(c) large intestine (d) none of these

49. **Trypsin digests**
(a) proteins in the stomach in an acidic medium
(b) proteins in the small intestine in an alkaline medium
(c) proteins in the small intestine in an acidic medium
(d) proteins in the small intestine in a neutral medium

50. **Which of the following groups are proteolytic enzymes?**
(a) ptyalin , Steapsin, Renin
(b) Pepsin, Renin, Trypsin
(c) Amylase, Lypase, Sucrase
(d) Maltase, Lactase, Sucrase

51. **Conversion of absorbed food material into protoplasm is called**
(a) absorption (b) assimilation
(c) acclimitation (d) none of these

52. **Elimination of undigested food is called**
(a) ingestion (b) egestion (c) excretion (d) secretion

53. **Which of the following statements is correct?**
(a) All enzymes have maximum activity at the neutral p^H value
(b) Each enzyme shows maximum activity at a certain p^H value
(c) Enzyme activity does not bear any relationship with p^H (d) None of the above

54. **An enzyme, its source, the substrate upon which it acts and the final product are given below. Which of them is not correct?**
(a) Renin/Stomach/Casein/Paracasein
(b) Pepsin/Stomach/Starch/Fructose
(c) Trypsin/Pancreas/Protein/Peptides
(d) Ptyalin/Salivary glands/Starch/Maltose

55. **Protein metabolism is under the control of**
(a) hormones (b) autonomic nervous system
(c) central nervous system (d) sympathetic nervous system

56. **Break down of fatty acids is called**
(a) addition (b) polymerization
(c) oxidation (d) hydrolysis

57. **The activity of salivary glands is controlled by**
(a) enzymes (b) hormones (c) nerves (d) none of these

58. **The p^H of the intestine is**
(a) in an acidic range (b) in an alkaline range
(c) in a neutral range (d) not definite

59. **Which of the following food components gives the maximum energy yield per gram?**
(a) Glucose (b) Fat (c) Protein (d) None of these

60. **With reference to fats, which of the following statements is correct?**
(a) They are greasy and relatively insoluble in water
(b) They are made up of carbon, hydrogen and oxygen
(c) They contain more calories per gram than proteins
(d) All the statements are correct

61. **In Homo sapiens there are**
(a) two pairs of salivary glands
(b) three pairs of salivary glands
(c) four pairs of salivary glands
(d) five pairs of salivary glands

62. **Which of the following are not salivary glands?**
(a) Parotid glands (b) Lacrimal glands
(c) Submaxillary glands (d) Sublingual glands

63. **Parotids of the salivary glands lie**
(a) below the tongue (b) below the eye balls
(c) beneath the ears (d) none of these places

64. **Sublinguals of the salivary glands lie**
(a) below the eye balls (b) beneath the ears
(c) below the tongue (d) none of these places

65. **The digestion of starch in the diet starts in the**
(a) liver (b) intestine (c) stomach (d) mouth

66. **Which of the following is not a function of the liver?**
(a) Detoxification (b) bile formation
(c) production of hormones (d) storage of glycogen

67. **Spot out the stranger**
(a) Liver (b) Spleen (c) Parotid glands (d) Pancreas

B. Excretion

1. **Excretion means**
(a) elimination of undigested food
(b) elimination of nitrogenous wastes
(c) both these (d) neither (a) nor (b)

2. **Ammonotelic animals are those which**
(a) absorb food in the form of ammonium compounds
(b) predominantly excrete in the form of ammonia
(c) have an affinity for ammonia
(d) none of these

3. **Ureotelic animals are those**
(a) in which there is an excess of urease
(b) in which the final excretory product is mainly urea
(c) which take only urea rich food (d) none of these

4. **Uricotelic animals are**
(a) those in which the undigested food is rich in uric acid
(b) those which consume uric acid enriched food
(c) those in which the final excretory product is in the form of uric acid
(d) none of these

5. **Uric acid is a kind of**
(a) purine (b) pyramidine (c) acid (d) amino acid

6. **Uric acid is**
(a) almost soluble in water and non-toxic
(b) almost insoluble in water and non-toxic
(c) almost insoluble in water and toxic
(d) almost soluble in water and toxic

7. **Urea is produced from an amino acid called**
(a) lysine (b) glycine (c) arginine (d) methionine

8. **Ammonotelic animals are**
(a) terrestrial (b) aerial (c) aquatic (d) none of these

9. **Cockroach is**
(a) ammonotelic (b) ureotelic
(c) uricotelic (d) both ureo and uricotelic

10. **Frog is**
(a) ammonotelic (b) ureotelic (c) uricotelic
(d) none of these

11. **The various steps of chemical reactions involved in the conversion of ammonia into urea is called**
(a) nitrogen cycle (b) ornithine cycle
(c) phosphorus cycle (d) none of these

12. **Which of the following amino acids are involved in the ornithine cycle?**
(a) Ornithine, citrulin and arginine
(b) Arginine, lysine and methionine
(c) Ornithine, lysine and methionine (d) none of these

13. **Which of the following statements is correct?**
(a) All aquatic animals are ammonotelic
(b) All terrestrial animals are uricotelic
(c) All birds are ureotelic (d) None of these

14. **The principle excretory organ of mammals is**
(a) lungs (b) skin (c) kidney (d) all of them

15. **Structural and physiological units of the mammalian kidney are called**
(a) coelomoducts (b) nephridia
(c) nephrostomes (d) none of these

16. **Which of the following are found in the kidney?**
(a) Peminiferous tubules (b) Uriniferous tubules
(c) Both of these (d) Neither (a) nor (b)

17. **Removal of the amino group from the amino acid is called**
(a) deamylation (b) deamination
(c) deaminocidation (d) none of these

18. **Which of the following is not a function of the kidney?**
(a) Regulation of p^H of body fluid
(b) Removal of nitrogenous wastes
(c) Maintenance of the osmotic concentration of the blood
(d) None of these

19. **Kidneys are found situated**
(a) in the thoracic region (b) just below the diaphragm
(c) attached to the ventral body wall
(d) attached to the dorsal body wall in the lower part of the abdomen

20. **Urea is formed in**
(a) intestine (b) kidney (c) liver (d) pancreas

21. **Urea is formed by the hydrolysis of**
(a) purines (b) amino acids
(c) carbohydrates (d) none of these

22. **Urea is transported by**
(a) RBC (b) WBC (c) plasma (d) none of these

23. **Urea is removed from the blood as it passes through**
(a) liver (b) heart (c) spleen (d) kidney

24. **Malpighian body consists of**
(a) Bowman's capsule and medullary rays
(b) glomerulus and Bowman's capsule
(c) glomerulus and collecting tube (d) none of these

25. **Urine is formed in the**
(a) seminiferous tubules (b) nephrons
(c) uretes (d) none of these

26. **Which of the following steps are involved in the formation of urine?**
(a) Ultra filtration (b) Tubular reabsorption
(c) Tubular secretion (d) All these

27. **Ultra filtration takes place in**
(a) glomerulus (b) Henle's loop
(c) collecting tube (d) none of these

28. **The glomerular filtrate is also called as**
(a) urine (b) primary urine
(c) concentrated urine (d) none of these

29. **Tubular reabsorption takes place in the**
(a) proximal convoluted tubule (b) distal convoluted tubule
(c) collecting tubule (d) none of these

30. **Which of the following are not filtered in the glomerulus?**
(a) Urea (b) Blood cells (c) Water (d) Glucose

31. **Which one of the following is not found in the primary urine?**
(a) Glucose (b) Sodium (c) Proteins (d) Water

32. **Mammals excrete**
(a) urea (b) uric acid (c) ammonia (d) none of these

33. **Reabsorption of water in the nephric tubules is under the control of**
(a) ADH (b) ATCH (c) GH (d) none of these

34. **Which of the following is not a part of the nephron?**
(a) Malpighian corpuscle (b) Malpighian tubule
(c) Distal convoluted tubule (d) Henley's loop

C. Circulation

1. **Circulatory system consists of**
(a) lymphatic system (b) blood vascular system
(c) blood vascular system and lymphatic system
(d) none of these

2. **The circulatory system is said to be open if**
(a) blood flows in blood vessels
(b) there are no blood vessels (c) there is no blood
(d) none of these

3. **In the closed circulatory system**
(a) there is no blood (b) there are no blood vessels
(c) blood flows in blood vessels (d) none of these

4. **Heart of mammals is**
(a) two chambered (b) three chambered
(c) four chambered (d) single chambered

5. **The heart of man is**
(a) myogenic (b) neurogenic
(c) both of these (d) neither (a) nor (b)

6. **the heart is neurogenic in**
(a) rabbit (b) frog (c) cockroach (d) squid

7. **The heart is called neurogenic if**
   (a) it is supplied with nerves
   (b) its pace maker is made up of nervous tissue
   (c) the heart is made up of muscles (d) none of these
8. **The heart is called myogenic if**
   (a) it is made up of muscles (b) its pace maker is made up of muscles (c) it has Chordae tendinae
   (d) none of these
9. **The covering of the heart is called**
   (a) perichondrium (b) pericardium
   (c) pleural membrane (d) none of these
10. **Which one of the following is carried by the mammalian heart?**
   (a) Right aortic arch (b) Left aortic arch
   (c) Both of these (d) Neither (a) nor (b)
11. **Contraction of the chambers of the heart is called**
   (a) systole (b) diastole
   (c) constriction (d) none of these
12. **Relaxation of the chambers of the heart is called**
   (a) systole (b) expansion (c) diastole (d) none of these
13. **A systole and a diastole together constitute the**
   (a) heart beat (b) heart rate (c) heart speed (d) none of these
14. **Blood pressure means**
   (a) the maximum pressure exerted on the heart during systole
   (b) the minimum pressure exerted on the heart during diastole
   (c) lateral pressure exerted by the blood on the walls of the blood vessels (d) all the above.
15. **The maximum pressure exerted on the wall of the artery during contraction is called**
   (a) pulse pressure (b) systolic pressure
   (c) diastolic pressure (d) none of these
16. **The minimum pressure exerted on the walls of the artery during relaxation is called**
   (a) pulse pressure (b) diastolic pressure
   (c) systolic pressure (d) none of these

17. **The difference between the systolic and diastolic pressures is called**
(a) pulse pressure (b) blood pressure
(c) filtration pressure (d) none of these

18. **The instrument used to measure blood pressure is**
(a) thermometer (b) galvanometer
(c) monometer (d) sphygmomanometer

19. **The systolic pressure in a healthy man is around**
(a) 100 mm (b) 105 mm (c) 115 mm (d) 120 mm

20. **The diastolic pressure in a healthy person is**
(a) 60 mm (b) 80 mm (c) 100 mm (d) 120 mm

21. **The blood pressure in a normal healthy person is**
(a) 60/100 (b) 120/80 (c) 100/80 (d) none of these

22. **A normal healthy person's pulse pressure is around**
(a) 20 mm (b) 40 mm (c) 60 mm (d) 80 mm

23. **The average rate of heart beat of a healthy person is**
(a) 80-100 per minute (b) 70-80 per minute
(c) 80-90 per minute (d) none of these

24. **The rate of heart beat is increased by**
(a) thyroxine (b) adrenaline
(c) both of these (d) neither (a) nor (b)

25. **In which one of the following are the cardiac centres present?**
(a) Cerebrum (b) Mid brain (c) Cerebellum
(d) Medulla oblangata

26. **The heart sounds are produced by the**
(a) auricular systole (b) ventricular systole
(c) valves of the heat (d) none of these

27. **The largest artery in the body is**
(a) aorta (b) pulmonary vein
(c) venacavum (d) none of these

28. **In a normal healthy person during sleep**
(a) blood pressure increases (b) blood pressure decreases
(c) heart rate increases (d) none of the above

29. **Which of the following blood vessels carries blood from the heart to the lungs?**
(a) Pulmonary artery (b) Pulmonary vein
(c) Aorta (d) None of these

30. **Which of the following blood from the lungs to the heart?**
(a) Aorta (b) Pulmonary artery
(c) Pulmonary vein (d) None of these

31. **In a mammalian heart, the impulses of the heart beats originate from**
(a) Ranvier node (b) Hensen's node
(c) sino-auricular node (d) auriculoventricular node

32. **Which one of the following is a pace maker?**
(a) Semilunar valve (b) Sino-auricular node
(c) Bicuspid valve (d) None of these

33. **The right auriculoventricular aperture is guarded by**
(a) semilunar valves (b) tricuspid valve
(c) bicuspid valve (d) none of these

34. **The left auriculoventricular aperture is guarded by**
(a) tricuspid valve (b) bicuspid valve
(c) semilunar valve (d) none of these

35. **The auriculoventricular valves are attached to the inner walls of the ventricles through**
(a) papillary muscles (b) Chordae tendinae
(c) both of them (d) neither (a) nor (b)

36. **Papillary muscles are present in**
(a) left auricle (b) right auricle
(c) ventricles (d) none of these

37. **Mammalian heart is a**
(a) branchial heart (b) pulmonary heart
(c) branchiopulmonary heart (d) none of these

38. **The right auricle receives**
(a) oxygenated blood (b) deoxygenated blood
(c) mixed blood (d) none of these

39. **Pulmonary vein originates from the**
(a) right auricle (b) right ventricle
(c) left auricle (d) left ventricle

40. **Aorta takes its origin from**
(a) right auricle (b) right ventricle
(c) left auricle (d) left ventricle

41. **The conducting system of the heart consists of**
(a) SAN and AVN (b) bundle of HiS

(c) Perkinje fibres (d) all of these

42. **Perkinje fibres form a network in the**
(a) walls of the auricles (b) walls of the ventricles
(c) both of these (d) neither (a) nor (b)

43. **During stress, the heart is stimulated by the**
(a) olfactory nerves (b) parasympathetic nerves
(c) sympathetic nerves (d) none of these

44. **Circulation of blood in man is referred to as**
(a) pulmonary circulation (b) systemic circulation
(c) incomplete double circulation (d) complete double circulation

D. Conduction of nerve impulse

1. **Nodes of Ranvier are present in**
(a) axon (b) dendron (c) myelin sheath of axon
(d) none of these

2. **Nissle's granules are found in the**
(a) axon (b) dendron (c) cyton (d) none of these

3. **The physiological junction between the axonic and dendronic ends in called**
(a) synapsis (b) suture (c) synapse (d) none of these

4. **Sensory nerve fibres are called**
(a) efferent nerve fibres (b) afferent nerve fibres
(c) mixed nerve fibres (d) all of these

5. **Motor nerve fibres are called**
(a) efferent nerve fibres (b) afferent nerve fibres
(c) mixed nerve fibres (d) none of these

6. **A nonstimulated nerve fibre**
(a) is a polarised nerve fibre
(b) is a depolarised nerve fibre
(c) carries action potential (d) none of these

7. **A stimulated nerve fibre**
(a) carries resting potential (b) is a polarised nerve fibre
(c) is a depolarised nerve fibre (d) none of these

8. **A depolarised nerve fibre carries**
   (a) positive charges on the outer surface and negative charges in the inner surface
   (b) negative charges on the outer surface and positive charges on the inner surface
   (c) both positive and negative charges on the outer and inner surfaces
   (d) none of these
9. **A nonstimulated nerve fibre carries**
   (a) positive charges on the inner surface and negative charges on the outer surface
   (b) negative charges on the inner surface and positive charges on the outer surface
   (c) both positive and negative charges on either side
   (d) none of these
10. **The resting potential of a nerve fibre is maintained by**
   (a) reflex action (b) sodium pump
   (c) both these (d) neither (a) nor (b)
11. **A polarised nerve fibre carries**
   (a) action potential (b) resting potential
   (c) both of these (d) neither (a) nor (b)
12. **A depolarised nerve fibre carries**
   (a) action potential (b) resting potential
   (c) both of these (d) neither (a) nor (b)
13. **A repolarised nerve fibre carries**
   (a) action potential (b) resting potential
   (c) both of these (d) neither (a) nor (b)
14. **Transmission of nerve impulses is a**
   (a) photochemical process (b) chemical process
   (c) electrical process (d) electrochemical process
15. **The transmission of nerve impulses in a medullated nerve fibre is**
   (a) slow (b) fast (c) moderate (d) none of these
16. **The nerve impulses skip from node to node in a medullated nerve fibre. This type of condution is called**
   (a) somersault movement (b) saltatory conduction

(c) flash conduction (d) none of these

17. **The period of non-excitability in a nerve fibre is called**
(a) interphase period (b) resting period
(c)absolute refractory period (d) none of these

18. **Acetylcholine is a**
(a) toxin (b) enzyme (c) vitamin (d) chemical transmitter

19. **The absolute refractory period in a mammalian nerve fibre usually lasts for about**
(a) 1/100 of a second (b) 1/500 of a second
(c) 1/2 second (d) none of these

20. **The conduction of nerve impulse follows an "all or none" principle. This means that**
(a) a stimulus of a low magnitude can arouse an impulse
(b) a stimulus of a very high magnitude can accelerate the rate of transmission
(c) a stimulus of a particular magnitude is necessary below which no response is shown and above which the nerve responds completes
(d) a stimulus of a particular magnitude is necessary, below or above which no response is shown

E. CHEMICAL COORDINATION

1. **Endocrinology is the study of**
(a) endocrine glands (b) hormones
(c) both of these (d) neither (a) nor (b)

2. **Adrenal glands are located**
(a) below the larynx (b) above the kidneys
(c) in the pancreas (d) none of these

3. **The pituitary gland is located**
(a) in the neck (b) below the stomach
(c) above the kidneys (d) none of these

4. **FSH is to estrogen as LH is to**
(a) vasopression (b) testosterone (c) progesterone (d) LTH

5. **Find the odd one out of the following**
(a) Pituitary gland (b) Parotid gland
(c) Thyroid gland (d) Adrenal gland

6. **To which of the following categories does the thymus gland belong?**
(a) Merocrine (b) Holocrine (c) Apocrine (d) Endocrine

7. **Which of the following are the chemical messengers?**
(a) Enzymes (b) Vitamins (c) Hormones (d) None of these

8. **Which of the following glands is both exocrine and endocrine in function?**
(a) Pituitary gland (b) Parotid gland
(c) Pancreas (d) Parathyroid

9. **Islets of Langerhans are located in the**
(a) brain (b) throat (c) pancreas (d) liver

10. **Alpha cells of the islets of Langerhans secrete**
(a) insulin (b) glucogon (c) pancreatic juice (d) mucin

11. **Beta cells of the islets of Langerhans secrete**
(a) insulin (b) glucogon (c) pancreatic juice (d) mucin

12. **Insulin helps in**
(a) respiration (b) conversion of glucose into glycogen
(c) conversion of glycogen into glucose (d) none of these

13. **Hyposecretion of insulin causes**
(a) Gull's disease (b) Grave's disease
(c) diabetes insipidus (d) diabetes mellitus

14. **Hypothyroidism causes**
(a) goitre (b) exopthalmic goitre
(c) anaemia (d) Addison's disease

15. **Hypersecretion of thyroxine causes**
(a) goitre (b) exopthalmic goitre
(c) anaemia (d) Addison's disease

16. **Which one of the following hormones is not secreted by the adenohypophysis?**
(a) FSH (b) LTH (c) LH (d) MSH

17. **Which one of the following is the lactogenic hormone?**
(a) FSH (b) LTH (c) LH (d) MSH

18. **Deficiency of adrenal cortex hormones causes**
(a) Grave's disease (b) Gull's disease
(c) Addison's disease (d) anaemia

19. **Hypothyroidism in adults causes**
(a) Grave's disease (b) Gull's disease
(c) Addison's disease (d) anaemia

20. **Hypothyroidism in children causes**
(a) myxoedema (b) cretinism
(c) both of these (d) neither (a) nor (b)

21. **Hyposecretion of thyroxine in adults causes**
(a) myxiderma (b) astheneia
(c) both of these (d) neither (a) nor (b)

22. **Which of the following parts of the pituitary secretes MSH?**
(a) Adenohypophysis (b) Neurohypophysis
(c) Intermediate lobe (d) None of these

23. **Deficiency of insulin results in**
(a) hypoglycemia (b) hyperglycemia
(c) anaemia (d) none of these

24. **Which of the following is called the interstitial cell stimulating hormone?**
(a) FSH (b) LTH (c) TSH (d) LH

25. **Vasopressin is a**
(a) hormone (b) vitamin (c) enzyme (d) none of these

26. **Which of the following conditions causes acromegaly?**
(a) Hypothyroidism (b) Excess of thyroxine
(c) Excess of STH (d) Excess of insulin

27. **Cushing's disease is caused due to excess secretion of**
(a) ADH (b) ACTH (c) TSH (d) STH

28. **The target organ of ACTH is**
(a) thyroids (b) thymus (c) adrenals (d) none of these

29. **Which one of the following is called the growth hormone?**
(a) TSH (b) STH (c) ACTH (d) LTH

30. **Which one of the following causes pituitary gigantism?**
(a) Hyposecretion of STH (b) Hypersecretion of STH
(c) Hyposecretion of TSH (d) Hypersecretion of TSH

31. **Reabsorption, of Na^+ and water in the nephrons is controlled by**
(a) ACTH (b) ADH (c) TSH (d) FSH

32. **Growth hormone is also known as**
(a) ACTH (b) TSH (c) STH (d) ADH

33. **Vasopression is also known as**
(a) ACTH (b) GH (c) ADH (d) LH

34. **Neurohypophysis secretes**
(a) LH and LTH (b) GH and MSH
(c) oxytocin and vasopression (d) none of these

35. **Pituitary dwarfs are produced due to**
(a) hypersecretion of STH (b)hyposecretion of STH
(c) hypersecretion of TSH (d) hyposecretion of TSH

36. **Conversion of glucose into glycogen is called**
(a) glucogensis (b) glycogenesis (c) glycogenolysis (d) none of these

37. **Conversion of glucose into glycogen is stimulated by**
(a) glucogon (b) insulin (c) pepsin (d) none of these

38. **Conversion of glycogen into glucose is stimulated by**
(a) glucogon (b) insulin (c) pepsin (d) renin

39. **Insulin regulates _____ metabolism**
(a) fat (b) protein (c) carbohydraate (d) none of these

40. **Which of the following hormones stimulates the development of mammary glands and milk secretion?**
(a) FSH (b) LH (c) LTH (d) TSH

41. **Which of the following is a master gland?**
(a) Thyroid gland (b) Adrenal gland
(c) Pancreas (d) None of these

42. **MSH regulates**
(a) the secretion of milk (b) production and distributionof melanin pigments (c) both of these (d) neither (a) nor (b)

43. **Which of the following groups includes the gonadotrophins**
(a) TSH, STH and ACTH (b) ACTH,ADH and TSH
(c) LH, LTH and FSH (d) None of these

44. **Gonadotrophins are secreted by**
(a) adenohypophysis (b) neurohypophysis
(c) intermediate lobe (d) none of these

45. **The target organs of gonadotrophins are**
(a) digestive glands (b) testis and ovary
(c) respiratory organs (d) none of these

46. **Which of the following glands secrete hormones?**
(a) Gonads (b) Thyroids (c) Pancreas (d) All these

47. **The smooth muscles of the uterine wall are stimulated by**
(a) ACTH (b) STH (c) vaspressin (d) oxytocin

48. Ovarian changes during the follicular phase of a normal menstrual cycle occur due to the secretions of
(a) TSH (b) FSH (c) LH (d) FSH and LH

49. The activity of the thyroid gland is regulated by a pituitary hormone which is abbreviated as
(a) GH (b) FSH (c) TSH (d) STH

50. Over-secretion of lactogenic hormone in adults causes a disease called
(a) Cushing's disease (b) acromegaly
(c) Simmond's disease (d) Grave's disease

51. Most of the iodine in the body is stored in
(a) adrenal glands (b) thyroid glands
(c) parathyroid glands (d) none of these

52. Which of the following is called an emergency gland?
(a) Pituitary (b) Thyroid (c) Adrenal (d) None of these

53. Which of the following hormones is responsible for the emotional states such as fear, anger, pain etc?
(a) Thyroxine (b) Insulin (c) Adrenalin (d) None of these

54. Which of the following cells of the islets of Langerhans secrete glucogon?
(a) Alpha cells (b) Beta cells (c) 'C' cells (d) None of these

55. Which of the following cell types of the islets of Langerhans secrete insulin?
(a) Alpha cells (b) Beta cells (c) Acinar cells (d) None of these

56. The target organ of TSH is
(a) testis (b) throat (c) thyroids (d) none of these

57. Oxytocin stimulates
(a) testis (b) ovary (c) kidney (d) none of these

58. Which of the following hormones influences the activity of the cells of Leydig of the testis?
(a) STH (b) FSH (c) LH (d) LTH

59. Which of the following is called the emergency hormone?
(a) Epinephrine (b) Norepinephrine (c)Thyroxine (d)None of these

60. Epinephrine is secreted by
(a) adrenals (b) thyroids (c) thymus (d) none of these

61. Which of the following hormones is secreted by adrenals?

(a) Progesterone (b) Estrogen (c) Norepinephrine (d) None of these

62. Which of the following hormones is secreted by the intermediate lobe of the pituitary?

(a) LH (b) LTH (c) FSH (d) None of these

63. Which of the following glands is found behind the optic chiasma of the brain?

(a) Parotid gland (b) Thyroid gland

(c) Pituitary gland (d) None of these

64. Mineralocorticoids and glucocorticoids are secreted by

(a) the cortex of the adrenal glands (b) medulla of the adrenal glands (c) both these (d) neither (a) nor (b)

65. Adrenalin and noradrenalin are secreted by

(a) the cortex of the adrenal glands (b) medulla of the adrenal glands (c) both of these (d) neither (a) nor (b)

66. Metamorphosis in amphibians is stimulated by

(a) adrenalin (b) noradrenalin (c) thyroxine (d) growth hormone

67. Spermatogenesis in males is stimulated by

(a) LH (b) LTH (c) FSH (d) GH

68. Excessive production of adrenalin can lead to

(a) hypotension (b) hypertension (c) hyperglycemia (d) none of these

69. Excessive production of noradrenalin can lead to

(a) hypertension (b) hyperglycemia

(c) both of these (d) neither (a) nor (b)

70. Hormones maintain

(a) epistasis in living systems (b) homeostasis in living systems

(c) both of these (d) neither (a) nor (b)

71. Homeostasis means

(a) the tendency to maintain stability in the internal environment of the organism

(b) the adjustment of the body temperature

(c) development of additional structures in the body

(d) none of these

72. Which of the following glands secretes the hormone cortisone?

(a) Thyroids (b) Pituitary (c) Adrenals (d) Pancreas

73. **Steroids are secreted by**
(a) adrenal cortex (b) adrenal medulla
(c) both these (d) neither (a) nor (b)

74. **Which of the following statements is correct?**
(a) Thyroid gland is bilobed (b) Thyroid gland is not lobed
(c) Thyroid gland is stimulated by thyroxine (d) None of these

75. **Spot out the correct statement.**
(a) Adrenals are both endocrine and exocrine in function
(b) Liver is endocrine in function
(c) Both the statements are correct
(d) Both are wrong

76. **Which one of the following statements is correct? Insulin and glucogon**
(a) perform the same function (b) perform antagonastic functions
(c) are secreted by the acinar cells (d) none of these

5. EMBRYOLOGY

1. **The female gonad of an animal is called**
(a) archegonium (b) androecium (c) gynoecium (d) ovary

2. **The male gonad of an animal is called**
(a) sperm (b) testis (c) androecium (d) none of these

3. **The female gamete of an animal is called**
(a) ootid (b) ovum (c) egg (d) none of these

4. **The male gamete of an animal is called**
(a) spore (b) sperm (c) spermatid (d) none of these

5. **The gametes are**
(a) haploid (b) diploid (c) triploid (d) polyploid

6. **The discharge of a mature ovum from the graafian follicle of the ovary is called**
(a) oogenesis (b) ovation (c) ovulation (d) none of these

7. **Cap like structure covering the head of the spermatozoan is called**
(a) chromosome (b) autosome (c) acrosome (d) none of these

8. **The reserve food material in the ovum is in the form of**
(a) glycogen (b) starch (c) yolk (d) none of these

9. **Which of the following types of cell divisions takes place during growth phase of gametogenesis ?**
(a) Meiosis (b) Mitosis (c) Amitosis (d) None of these

10. **The process of gamete formation in the gonad is called**
(a) gametolysis (b) gametogenesis (c) spermatogenesis (d)oogenesis

11. **The process of formation of sperms in the testis is called**
(a) spermiogenesis (b) spermateliosis
(c) spermatogenesis (d) none of these

12. **The acrosome of the sperm is derived from**
(a) mitochondrion (b) endoplasmic reticulum
(c) golgi complex (d) none of these

13. **The centrioles in the sperm are contained in the**
(a) acrosome (b) nucleus (c) middle piece (d) tail

14. **Which of the following is motile ?**
(a) Ovum (b) Sperm (c) Zygote (d) None of these

15. **The process of differentiation of spermatids into sperms is called**
(a) spermatogenesis (b) spermiogenesis
(c) spermlysis (d) none of the above

16. **Each primary spermatocyte gives rise to _____ spermatids**
(a) four diploid (b) four haploid (c) eight diploid (d) eight haploid

17. **Which of the following cells are motile?**
(a) Primary spermatocytes (b) Spermatids
(c) Spermatozoa (d) None of these

18. **Male gametes are produced in the**
(a) uriniferous tubules (b) seminiferous tubules
(c) malpighian tubules (d) none of these

19. **Cells to which sperms are found attached in the testis are called _____ cells**
(a) phagocytic (b) sertoli (c) giant (d) none of these

20. **The spermatozoa in the testis are nourished by _____ cells**
(a) connective tissue (b) sertoli (c) phagocytic (d) giant

21. **The sperm nucleus carries _____ chromosomes**
(a) haploid set of maternal (b) diploid set of maternal
(c) haploid set of paternal (d) diploid set of paternal

22. **The amount of cytoplasm in the sperm is**
(a) very little (b) moderate (c) enormous (d) absent

23. Which of the following serves as reserve food in the sperm?
(a) Yolk (b) Starch only (c) Glycogen (d) No reserve food

24. Each spermatogonium gives rise to a primary spermatocyte at the end of _____ phase
(a) multiplication (b) growth (c) maturation (d) none of these

25. The process of spermatogenesis is accomplished by
(a) multiplication phase (b) growth phase
(c) maturation phase (d) all the three

26. The primary germ cells which give rise to the sperms are called
(a) spermatozoa (b) spermatids (c) spermatogonia (d) none of these

27. Mitochondria of the sperm are present in the
(a) head (b) middle piece
(c) main piece of the tail (d) end piece of the tail

28. The sperm moves with the help of the
(a) head (b) middle piece (c) tail (d) none of these

29. First part of the tail with a protoplasmic sheath is called
(a) first piece (b) middle piece (c) main piece (d) none of these

30. Acrosome helps in
(a) movement of the sperm (b) penetration of the ovum
(c) both of these (d) neither (a) nor (b)

31. Which of the following types of cell divisions takes place during the maturation phase of Oogenesis ?
(a) Amitosis (b) Mitosis (c) Meiosis (d) None of these

32. The process of formation of ova in the ovary is called
(a) gametolysis (b) oogenesis (c) spermatogenesis (d) none of these

33. Which of the following is motile?
(a) Oogonium (b) Ootid (c) Ovum (d) None of these

34. Each primary Oocyte gives rise to
(a) four haploid ova (b) three haploid ova
(c) two haploid ova (d) Only one haploid ova

35. The female gametes are produced in the
(a) testis (b) ovary (c) kidney (d) none of these

36. The primary Oogonium gives rise to the primary Oocyte by
(a) mitosis (b) meiosis (c) amitosis (d) none of these

37. The primary Oogonia are
(a) haploid (b) diploid (c) triploid (d) polyploid

38. **The primary Oocyte gives rise to the secondary Oocyte by**
(a) mitosis (b) meiosis (c) amitosis (d) none of these

39. **The nucleus of the ovum carries**
(a) haploid set of paternal chromosomes
(b) haploid set of maternal chromosomes
(c)diploid set of paternal chromosomes
(d) diploid set of maternal chromosomes

40. **The nucleus of the ovum is called**
(a) germinal spot (b) germinal vesicle
(c) germ plasm (d) none of these

41. **The amount of cytoplasm in the ovum is**
(a) very little (b) enormous (c) moderate (d) absent

42. **Blastopore is an aperture found in the**
(a) blastula (b) gastrula (c) neurula (d) larva

43. **The process of Oogenesis is accomplished by**
(a) multiplication phase (b) growth phase
(c) maturation phase (d) all these

44. **Primary germ cells which give rise to the ova are called**
(a) Ootids (b) Oocytes (c) Oogonia (d) none of these

45. **Graafian follicle develops in the ovary of**
(a) reptiles (b) birds (c) amphibians (d) higher mammals

46. **Graafian follicle encloses**
(a) the ovary (b) ovum (c) sperm (d) none of these

47. **The cavity of the graafian follicle is called**
(a) coelom (b) blastocoel (c) gastrocoel (d) antrum

48. **Polar bodies are produced during**
(a) spermatogenesis (b) oogenesis
(c) both these (d) neither (a) nor (b)

49. **Vitelline membrane of the egg is secreted by the**
(a) ovum (b) ovary (c) oviduct (d) none of these

50. **Primary egg envelopes are those which are secreted by the**
(a) ovary (b) oviduct (c) ovum (d) none of these

51. **Secondary egg membranes are secreted by the**
(a) ovum (b) ovary (c) oviduct (d) none of these

52. **Tertiary egg envelopes are secreted by**
(a) ovum (b) ovary (c) oviduct (d) none of these

53. The vitelline membrane is secreted by the

(a) ovum (b) ovary (c) oviduct (d) all these

54. The vitelline membrane is a

(a) primary egg envelope (b) secondary membrane

(c) tertiary membrane (d) none of these

55. The shell of hen's egg is secreted by

(a) ovum (b) ovary (c) oviduct (d) none of these

56. Graafian follicle is surrounded by

(a) theca externa (b) theca interna

(c) both of these (d) neither (a) nor (b)

57. The calcareous shell of a bird's egg is a _____ membrane

(a) primary (b) secondary (c) tertiary (d) none of these

58. Mammalian ovum is surrounded by

(a) zona reticulata (b) zona fasciculata

(c) zona pellucida (d) noen of these

59. Zona radiata is derived from

(a) theca externa (b) theca interna

(c) cumulus oophorus (d) none of these

60. Jelly coats of the frogs egg are _____ membranes

(a) primary (b) secondary (c) tertiary (d) none of these

61. Jelly coats of the frog's egg

(a) are protective (b) provide necessary buoyancy

(c) both of these (d) neither (a) nor (b)

62. Largest animal egg is the egg of

(a) an elephant (b) a whale (c) an ostrich (d) none of these

63. Which of the following statement is not correct?

(a) The first polar body divides equally

(b) The primary oocyte undergoes equal division

(c) The secondary oocyte undergoes equal division

(d) The polar body and the polar cells disintegrate

64. Each primary oocyte gives rise to

(a) 4 functional ova (b) 2 functional ova

(c) only one functional ovum (d) 2 nonfunctional ova

65. The cytoplasm of the ovum is called

(a) sacroplasm (b) axoplasm (c) ooplasm (d) none of these

66. Axial filament of the sperm

(a) is formed by the acrosome (b) forms the axis of the sperm tail
(c) arises from the nucleus (d) none of these

67. Chorion of the insect eggs is an example for
(a) primary membrane (b) secondary membrane
(c) tertiary membrane (d) none of these

68. Animal eggs are classified according to
(a) the amount of yolk present in them
(b) the distribution of yolk in them (c) both these
(d) neither (a) nor (b)

69. Egg albumin is a simple
(a) sugar (b) lipid (c) protein (d) none of these

70. Eggs with little amount of yolk are called
(a) alecithal (b) microlecithal (c) megalecithal (d) none of these

71. Eggs with large amount of yolk are called
(a) alecithal (b) oligolecithal (c) polylecithal (d) none of these

72. Egg of amphioxus is
(a) alecithal (b) microlecithal (c) macrolecithal (d) mesolecithal

73. Egg of frog is
(a) alecithal (b) microlecithal (c) megalecithal (d) none of these

74. Eggs with little amount of yolk which is uniformly distributed are called
(a) isolecithal (b) centrolecithal (c) telolecithal (d) none of these

75. In a centrolecithal egg, the yolk is
(a) distributed throughout the cytoplasm
(b) restricted to one pole
(c) confined to the centre of the cytoplasm
(d) none of these

76. If the yolk is confined to one pole of the egg, it is called
(a) centrolecithal (b) macrolecithal
(c) telolecithal (d) none of these

77. The egg of frog is
(a) telolecithal (b) mesolecithal
(c) telolecithal and mesolecithal (d) none of these

78. Which of the follcwing eggs is telolecithal?
(a) Eggs of rabbit (b) Eggs of insects
(c) Eggs of amphioxus (d) Eggs of birds

79. In the frog's egg, the yolk is

(a) distributed throughout the egg
(b) distinctly localised in the vegetal pole
(c) distinctly localised in the animal pole
(d) nc of these

80. Pigmented granules in the frog's egg are
(a) absent (b) present in the upper two thirds of the egg
(c) present in the lower one third of the egg
(d) present throughout the egg

81. The animal pole of the frog's egg is
(a) creamy white in colour (b) black in colour
(c) yellow in colour (d) colourless

82. The ovum proper is bounded by
(a) jelly coats (b) vitelline membrane
(c) plasma membrane (d) none of these

83. The jelly coats of the frog's egg
(a) hold the eggs together in a mass (b) give protection
(c) both of these (d) neither (a) nor (b)

84. The disc like area with a minute nucleus and a little cytoplasm in the animal pole of a bird's egg is called
(a) blastula (b) blastodisc (c) gastrodisc (d) none of these

85. The central mass of white yolk in the egg of a bird is called
(a) latimaria (b) latebra (c) nucleus of pander (d) none of these

86. The blastodisc is situated on
(a) latebra (b) nucleus of pander
(c) nucleus of Schwan (d) none of these

87. Hen's egg has
(a) only one type of yolk (b) two types of yolk
(c) many types of yolk (d) no yolk

88. The tertiary membranes of the hen's egg are formed
(a) before fertilisation (b) after fertilisation
(c) sometimes before and sometimes after fertilisation
(d) none of these

89. The two types of yolk in the hen's egg are
(a) yellow yolk and brown yolk (b) brown yolk and white yolk
(c) yellow yolk and white yolk (d) none of these

90. The shell of hen's egg is

(a) calcereous (b) proteinaceous

(c) lipoproteinaceous (d) none of these

91. The shell of a bird's egg is a _____ membrane

(a) primary (b) secondary (c) tertiary (d) none of these

92. Eggs with porous calcareous shells are called

(a) dry eggs (b) non-cleidoic eggs

(c) cleidoic eggs (d) none of these

93. Cleidoic eggs can not be laid

(a) on land (b) in the nests (c) in water (d) none of these

94. The antrum of the graafian follicle contains a fluid called

(a) aqueous humor (b) vitreous humor

(c) liquor folliculi (d) none of these

95. After ovulation, the graafian follicle

(a) remains as it is (b) degenerates

(c) develops into a corpus luteum (d) is absorbed

96. Ovulation is stimulated by

(a) TSH (b) ACTH (c) LH (d) GH

97. The process of fusion of a sperm and an ovum is called

(a) zygote (b) conjugation (c) fertilisation (d) none of these

98. Fertilisation results in the formation of a

(a) gastrula (b) neurula (c) zygote (d) none of these

99. The zygote is

(a) haploid (b) triploid (c) diploid (d) none of these

100. Fertilisation is antithesis of

(a) amitosis (b) mitosis (c) meiosis (d) none of these

101. Fertilisation restores

(a) polyploidy from diploidy (b) haploidy from diploidy

(c) diploidy from polyploidy (d) none of these

102. Self-fertilisation takes place in

(a) unisexual animals (b) bisexual animals

(c) both these (d) neither (a) nor (b)

103. Cross fertilisation takes place in

(a) unisexual animals only (b) bisexual animals only

(c) both uni and bisexual animals (d) neither (a) nor (b)

104. Fertilisation in amphibians is

(a) external (b) internal (c) external or internal (d) none of these

105. Fertilisation in reptiles, mammals and birds is

(a) external (b) internal

(c) either internal or external (d) neither external nor internal

106. The process of fusion of the male pronucleus with the female pronucleus is called

(a) fusion (b) amphimixis (c) amplexus (d) none of these

107. The sperm produces a substance called

(a) fertilizin (b) antifertilizin (c) progesterone (d) estrogen

108. A mature ovum produces a substance called

(a) progesterone (b) testosterone (c) fertilizin (d) anti-fertilizin

109. Fertilizin is

(a) an enzyme (b) androgamone (c) gynogamone (d) none of these

110. Antifertilizin is

(a) an enzyme (b) androgamone (c) gynagamone (d) none of these

111. Fertilizin is a

(a) polysaccharide (b) steroid (c) glycoprotein (d) none of these

112. Entry of a single sperm into the ovum is called

(a) monogamy (b) monospermy (c) polyspermy (d) aspermy

113. Entry of many sperms into the ovum is called

(a) heterogamy (b) heterospermy (c) polyspermy (d) none of these

114. Which of the following statements is correct?

(a) The sperm requires a liquid medium to approach the ovum

(b) Water is the medium for external fertilisation

(c) Body fluid is the medium for external fertilisation

(d) All the statements are correct

115. Fertilizin and antifertilizin help in mutual attraction of the

(a) sperms (b) sperms and ova of different species

(c) sperms and ova of the same species (d) none of these

116. Activation of the ovum is brought about by

(a) fertilizin (b) antifertilizin

(c) contact of the sperm (d) none of these

117. The mammalian sperm produces a lytic enzyme called

(a) sucrase (b) lipase (c) hyaluronidase (d) none of these

118. The sperm lysins help in

(a) attraction of the gametes (b) agglutination of the gametes

(c) dissolution of the egg membrane (d) none of these

119. The acrosomal filament helps in

(a) dissolution of the egg membrane (b) the penetration process

(c) both these (d) neither (a) nor (b)

120. The ovum produces a cone like projection at the point of contact of the sperm. It is called

(a) an egg elevation (b) egg cone

(c) fertilization cone (d) none of these

121. The fertilization cone engulfs

(a) food material (b) liquid food materials

(c) the sperm head (d) none of these

122. Consequent to the entry of the sperm, the egg developes a membrane called _____ membrane.

(a) vitelline (b) secondary (c) tertiary (d) fertilization

123. The fertilization membrane prevents

(a) the entry of the sperm (b) the exit of the sperm

(c) the entry of many sperms (d) none of these

124. If many sperms penetrate the ovum

(a) all of them die (b) all of them fuse with the egg nucleus

(c) only one of them fuses with the female nucleus

(d) the ovum dies

125. With reference to fertilization, which of the following statements is true?

(a) It restores diploid number of chromosomes in the zygote

(b) It brings about activation of the egg

(c) It brings about recombination of genes

(d) All the above

126. The phenomenon of egg laying is called

(a) oviparity (b) viviparity (c) ooviviparity (d) none of these

127. Animals which lay eggs are called

(a) viviparous (b) oviparous (c) ooviviparous (d) none of these

128. The phenomenon of giving birth to the young ones is called

(a) oviparity (b) viviparity (c) ooviviparity (d) none of these

129. Animals which give birth to the young ones are called

(a) oviparous (b) viviparous (c) ovoviviparous (d) none of these

130. In oviparous animals, the developing embryo depends on the mother for

(a) food (b) shelter (c) for both food and shelter (d) none of these

131. Which of the following animals is oviparous?

(a) Sea cow (b) Whale (c) Turtle (d) Bat

132. In viviparous animals, the developing embryo depends on the mother for

(a) food only (b) shelter only

(c) both food and shelter (d) none of these

133. Which of the following animals is viviparous?

(a) Platypus (b) Crocodile (c) Pigeon (d) Bat

134. In ovoviviparous animals the developing embryo depends on the mother for

(a) food only (b) shelter only

(c) both food and shelter (d) none of these

135. Which of the following animals is ovoviviparous?

(a) Cockroach (b) Peripatus (c) Platypus (d) None of these

136. Development of an ovum into a larva or adult without being fertilized is called

(a) neoteny (b) pedogenesis (c) parthenogenesis (d) none of these

137. Arrhenotoky and thelytoky are two types of

(a) artificial parthenogenesis (b) natural parthenogenesis

(c) fertilization (d) none of these

138. Arrhenotoky is called _____ parthenogenesis

(a) haploid (b) diploid (c) polyploid (d) none of these

139. The type of parthenogenesis in honey bees is called

(a) thelytoky (b) amphitoky (c) arrhenotoky (d) none of these

140. Arrhenotoky in honey bees results in the production of impaternate

(a) haploid females (b) diploid females

(c) haploid males (d) diploid males

141. Thelytoky results in the production of

(a) haploid females (b) diploid females

(c) haploid males (d) diploid males

142. Which of the following animal groups exhibit thelytoky?

(a) Flatworms (b) Aphids (C) Millipedes (d) None of these

143. Artificial parthenogenesis is accomplished by _____ agents.

(a) physical (b) chemical

(c) both physical and chemical (d) none of these

144. Parthenogenesis is useful in

(a) sex determination (b) avoiding difficulties of meiosis in polyploid individuals (c) the rapid increase in the number of individuals in a population (d) all these

145. The zygote divides by

(a) mitosis (b) amitosis (c) meiosis (d) none of these

146. The division of the zygote by mitosis is called

(a) fission (b) lineage (c) cleavage (d) none of these

147. Cleavage results in the formation of

(a) zygote cells (b) gastromeres (c) blastomeres (d) none of these

148. If the cleavage results in the production of equal sized cells, then it is referred to as _____ cleavage.

(a) meroblastic (b) superficial
(c) holoblastic unequal (d) discoidal

149. The zygote of Amphioxus undergoes _____ cleavage.

(a) meroblastic (b) holoblastic equal
(c) holoblastic unequal (d) discoidal

150. The zygote of frog undergoes _____ cleavage.

(a) meroblastic (b) holoblastic unequal
(c) holoblastic equal (d) none of these

151. The Hen's egg undergoes _____ cleavage

(a) holoblastic unequal (b) holoblastic equal
(c) meroblastic (d) none of these

152. In the meroblastic type of cleavage, _____ divides.

(a) the entire egg (b) only the yolk part
(c) only the blastodisc (d) only the nucleus

153. A fertilized egg of frog differs from an unfertilized egg in having a

(a) fertilization membrane (b) diploid nucleus
(c) grey cresent (d) all these

154. Grey cresent is a _____ area.

(a) less pigmented (b) pigmentless
(c) heavily pigmented (d) none of these

155. A grey crescent developes in the zygote of frog

(a) at the point of sperm entry
(b) in the area opposite to that of the sperm entrance
(c) sometimes (a) and sometimes (b) (d) none of these

156. The first and second cleavages in the egg of frog is

(a) irregular (b) horizontal (c) latitudinal (d) meridional

157. The third cleavage in the egg of frog is

(a) horizontal (b) irregular (c) meridional (d) none of these

158. The fourth cleavage in the egg of frog is

(a) horizontal (b) irregular (c) latitudinal (d) none of these

159. The fifth cleavage in the egg of frog is

(a) meridional (b) irregular (c) horizontal (d) none of these

160. The division after the fifth cleavage is

(a) latitudinal (b) meridional (c) irregular (d) horizontal

161. With reference to the cleavage of frog's egg, which of the following statements is true?

(a) The third cleavage is latitudinal

(b) The fourth cleavage is meridional

(c) The fifth cleavage is latitudinal

(d) All these are true

162. The cleavage pattern is largely determined by

(a) the amount of yolk (b) distribution of yolk

(c) both (a) and (b) (d) neither (a) nor (b)

163. Cleavage of frog's egg results in the formation of

(a) micromeres (b) megameres

(c) both (a) and (b) (d) none of these

164. With reference to cleavage in frog, which of the following statements is true?

(a) Macromeres are formed in the animal pole

(b) Micromeres are formed in the vegetal pole

(c) Cleavage becomes unequal from the third cleavage onwards

(d) None of these

165. Cleavage results in the formation of a solid mass of cells called

(a) gastrula (b) blastula (c) morula (d) neurula

166. Blastulation is the process of transformation of

(a) gastrula into blastula (b) morula into blastula

(c) neurula into blastula (d) blastula into gastrula

167. Bastula has a well defined cavity called

(a) gastrocoel (b) archenteron (c) blastocoel (d) none of these

168. The diagnostic feature of the blastula of frog is the presence of

(a) yolk filled macromeres (b) archenteron

(c) excentric blastocoel (d) none of these

169. Gastrulation is the process of transformation of

(a) morula into gastrula (b) neurula into gastrula

(c) blastula into gastrula (d) gastrula into blastula

170. Gastrulation begins at the

(a) animal pole end (b) vegetal pole end

(c) region of grey crescent (d) none of these

171. The morphogenetic movements involved in the gastrulation of frog are

(a) invagination (b) involution (c) epiboly (d) all these

172. The rolling in or the turning movement of the blastomeres during gastrulation of frog is called

(a) invagination (b) involution (c) emboly (d) epiboly

173. Gastrula encloses a cavity called

(a) coelom (b) blastocoel (c) archenteron (d) none of these

174. The archenteron opens to the outside by the

(a) mouth (b) neural pore (c) blastopore (d) none of these

175. Membrana granulosa cells are found in the

(a) ovum (b) sperm (c) graafian follicle (d) none of these

176. Growth of one layer over the other is called

(a) involution (b) invagination (c) epiboly (d) divergence

177. The primary organizer of the gastrula of frog is the

(a) archenteron (b) ventral lip of the blastopore

(c) dorsal lip of the blastopore (d) none of these

178. An early gastrula has

(a) only one layer of cells (b) two layers of cells

(c) three layers of cells (d) no cell layers

179. An advanced gastrula has

(a) only one layer of cells (b) two layers of cells

(c) three layers of cells (d) four layers of cells

180. Which of the following primary germ layers are found in a late gastrula?

(a) Ectoderm (b) Endoderm (c) Mesoderm (d) All the three

181. The ectoderm is otherwise called as

(a) mesoblast (b) epiblast (c) hypoblast (d) none of these

182. The endoderm is otherwise called as

(a) mesoblast (b) epiblast (c) hypoblast (d) none of these

183. **Presence of yolk plug is a characteristic feature of**
(a) embryo of frog (b) morula of frog
(c) blastula of frog (d) gastrula of frog

184. **The chordamesodermal cells give rise to**
(a) neural tube and notochord (b) neural tube and mesoderm
(c) notochord and mesoderm (d) notochord and neural tube

185. **The neurectoderm cells give rise to**
(a) ectoderm (b) neural plate
(c) both (a) and (b) (d) neither (a) nor (b)

186. **During which of the following developmental stages does a rearrangement of the blastomeres takes place?**
(a) Morula (b) Blastula (c) Gastrula (d) Neurula

187. **Which of the following are ectodermal derivaties?**
(a) Epidermis of the skin (b) Nervous system
(c) Lens of the eye (d) All of these

188. **Muscles, skeleton and kidneys are derivatives of**
(a) ectoderm (b) endoderm (c) mesoderm (d) none of these

189. **Respiratory system, Liver and Pancreas are derivatives of**
(a) ectoderm (b) endoderm (c) mesoderm (d) none of these

190. **Blood is a derivative of**
(a) epiblast (b) hypoblast (c) mesoderm (d) none of these

191. **Which of the following are postgastrulation changes?**
(a) Formation of ectoderm and endoderm
(b) Coelom formation and notogenesis
(c) Development of archenteron
(d) None of these

192. **Which one of the following is present in an early neurula ?**
(a) Neural plate (b) Neural groove (c) Neural fold (d) Neural tube

193. **Which one of the following is present in an advanced neurala?**
(a) Neural plate (b) Neural groove (c) Neural fold (d) Neural tube

194. **Which one of the following sequences is correct during neurulation?**
(a) Neural tube, neural fold, neural groove and neural plate
(b) Neural plate, neural groove, neural tube and neural fold
(c) Neural plate, neural fold, neural groove and neural tube
(d) Neural plate, neural tube, neural fold, neural groove

195. Neuropore is present

(a) at the posterior end of the neural tube

(b) in the middle region of the neural tube

(c) at the anterior end of the neural tube

(d) in none of these places

196. While the notochord is being formed, some ectoderm cells lying above the notochord thicken to form

(a) mesoderm (b) notochordal sheath (c) neural plate (d) yolk plug

197. Neural folds rise up and meet above to form the

(a) neural plate (b) notochord (c) neural tube (d) none of these

198. Vertebrates characterised by having an amnion during their development are called

(a) Anamniotes (b) Amniotes (c) Placentals (d) None of these

199. Vertebrates which do not develop an amnion during their development are called

(a) Amniotes (b) Anamniotes (c) Placentals (d) none of these

200. Fishes and amphibians are

(a) Amnites (b) Anamniotes (c) Placentals (d) none of these

201. Reptiles and Birds are

(a) Amniotes (b) Anamniotes (c) Placentals (d) none of these

202. The fluid filled sac around the embryo in reptiles, birds and mammals is called

(a) chorion (b) allentois (c) yolk sac (d) none of these

203. Amnion develops from the combined folds of

(a) ectoderm and endoderm (b) mesoderm and endoderm

(c) ectoderm and mesoderm (d) none of these

204. The function of amnion is to

(a) protect the embryo from shocks and desication

(b) aid in nutrition

(c) aid in respiration

(d) none of these

205. Chorion is found

(a) inside the amnion (b) outside the amnion

(c) inside the allantois (d) inside the yolk sac

206. The chorion

(a) is protective in function (b) takes spart in the formation of placenta (c) both (a) and (b) (d) neither (a) nor (b)

207. Allentois develops as an outgrowth from the ventral wall of the
(a) foregut (b) hindgut (c) midgut (d) none of these

208. Which one of the following is referred to as an embryonic urinary bladder?
(a) Amnion (b) Chorion (c) Allantois (d) Yolk sac

209. In higher mammals the chorion and the allantois together form
(a) the yolk sac (b) placenta
(c) neither (a) nor (b) (d) both (a) and (b)

210. In birds, at the end of the embryonic period the allantois
(a) continues to be nutritive
(b) continues to be protective
(c) remains as a distincitive layer
(d) is completely absorbed into the body

211. The yolk sac develops as an outgrowth from the floor of
(a) foregut (b) midgut (c) hindgut (d) none of these

212. The function of the yolk sac is
(a) respiration (b) excretion (c) nutrition (d) all of these

213. The yolk sac is rudimentaly in
(a) Reptiles (b) Birds (c) Mammals (d) all Amniotes

214. Amnion, chorion, allantois and yolk sac are together known as
(a) uterine membranes (b) primary membranes
(c) foetal membranes (d) none of these

215. Placenta develops in
(a) oviparous animals (b) viviparous animals
(c) ovoviviparous animals (d) none of these

216. A connection between the embryo and the mother in higher mammals is established by
(a) amnion (b) allantois (c) yolk sac (d) placenta

217. The Placenta stores
(a) starch (b) glucose (c) glycogen (d) oils

218. The Placenta secretes
(a) enzymes (b) vitamines (c) hormones (d) none of these

219. Shark is an example for
(a) allantoic Placenta (b) yolk sac Placenta
(c) both (a) and (b) (d) neither (a) nor (b)

FIRST YEAR P.U. PORTIONS TO MAKE YOU MORE PERFECT

1. **The study of classification of animals and plants is called**
   (a) toxicology (b) taxidermy (c) taxonomy (d) none of these
2. **The art of rearing silkworms for the production of raw silk is**
   (a) moriculture (b) sericulture (c) agriculture (d) horticulture
3. **Pisciculture is the**
   (a) study of fishes (b) art of rearing fishes
   (c) study of insects (d) cultivation of vegetables, fruits and ornamental plants
4. **Sir Francis Galton defined the term**
   (a) eugenics (b) genetics (c) entomology (d) agriculture
5. **The study of fossils is called**
   (a) physiology (b) palaeontology (c) ecology (d) none of these
6. **Apiculture is the**
   (a) management of domestic animals
   (b) management of cattle for milk and milk products
   (c) breeding and management of honey bees for honey and wax
   (d) none of these
7. **Which of the following is referred to as microbiology?**
   (a) Study of bacteria (b) Study of viruses
   (c) Study of yeasts (d) Study of all these
8. **Growth in living organisms is by**
   (a) an increase in girth (b) increase in weight
   (c) intussusception (d) intersection
9. **Accretion is characteristic of**
   (a) plants (b) animals (c) non-living things (d) none of these
10. **Protoplasm was called "the physical basis of life" by**
    (a) Aristotle (b) Huxley (c) Robert Boyle (d) Newton
11. **The process during which energy is released is called**
    (a) anabolism (b) ketabolism (c) trophism (d) none of these
12. **Who is the author of the book 'Origin of species?**
    (a) Oparin (b) Charles Darwin
    (c) Melvin Calvin (d) None of these

13. **Which of the following statements is correct?**
(a) Aristotle proposed the theory of 'use and disuse'
(b) Lamarck proposed the theory of 'inheritance of acquired characters'
(c) Mendel proposed the theory of Mutation
(d) Pasteur proposed the law of independent assortment

14. **Who wrote the book 'Micrographia?**
(a) Charles Darwin (b) Lamarck
(c) Robert Hooke (d) Mendel

15. **The term 'Cell' was first introduced by**
(a) Leeuwenhook (b) Robert Hooke
(c) Robert Brown (d) none of these

16. **Which of the following Indian born scientists was awarded the Nobel prize in 1968?**
(a) J.B.S. Haldane (b) J.C.Bose
(c) H.G.Khorana (d) None of these

17. **The theory of 'natural selction' was proposed by**
(a) Aristotle (b) Charles Darwin
(c) Robert Brown (d) Robert Hooke

18. **The ship in which Charles Darwin travelled is**
(a) The Victoria (b) H.M.S. Beagle
(c) Royal ship (d) none of these

19. **Which of the following statements is true? Louis Pasteur**
(a) invented inoculation against rabies
(b) explained the principle of sterilization
(c) disproved the theory of abiogenesis
(d) all the above

20. **The author of the book 'Systema Naturael' is**
(a) Charles Darwin (b) Carolus Linnaeus
(c) Hugo de Vries (d) none of these

21. **Binomial nomenclature was introduced by**
(a) Lamarck (b) Linnaeus
(c) Robert Brown (d) Robert Hooke

22. **The ultimate unit of taxonomy is**
(a) genus (b) order (c) species (d) class

23. **Multicellular photosynthetic plants are included under**
(a) Monera (b) Protista (c) Metaphyta (d) Metazoa

24. **Algae, fungi, slime moulds and protozoans are included under**
(a) Monera (b) Protista (c) Metaphyta (d) Metazoa

25. **Sleeping sickness is caused by**
(a) Trypanosoma (b) Plasmodium
(c) Entamoeba (d) Gregarina

26. **Plasmodium causes**
(a) sleeping sickness (b) malaria
(c) pyarrhaea (d) none of these

27. **Entamoeba histolytica is a parasite in the**
(a) mouth of man (b) liver of man
(c) lung of man (d) colon of man

28. **The function of the contractile vacuole is**
(a) egestion (b) nutrition (c) respiration (d) osmoregulation

29. **Which of the following is the vector for malaria?**
(a) Culex mosquito (b) Anopheles mosquito
(c) Tse tse fly (d) House fly

30. **Spot out the stranger**
(a) Cilium (b) Flagellum (c) Pseudopodium
(d) Parapodium

31. **Which of the following protozoan possesses paramylum bodies?**
(a) Entamoeba (b) Euglena
(c) Paramoecium (d) none of these

32. **Amoebic dysentry is caused by**
(a) Entamoeba coli (b) Entamoeba gingilvalis
(c) Entamoeba histolytica (d) none of these

33. **The class Ciliata is also known as**
(a) Infusoria (b) Mastigophora
(c) Sporozoa (d) none of these

34. **Which of the following protozoans could be considered a connecting link between plants and animals?**
(a) Paramoecium (b) Plasmodium
(c) Euglena (d None of these

35. **With reference to sponges which one of the following statements is correct?**
(a) They are exclusively marine

(b) They are exclusively fresh water
(c) They are all sedentary
(d) They do not reproduce by asexuál methods

36. **Which one of the following is a fresh water sponge?**
(a) Sycon (b) Spongilla (c) Leuocosolenia (d) Grautia

37. **The skeletal elements of sponges are called**
(a) spines (b) spinules (c) spicules (d) oscicles

38. **Asexual reproductive units of fresh water sponges are called**
(a) germ cells (b) gemmules (c) cysts (d) cocoons

39. **The minute pores present on the body surface of sponges are called**
(a) dorsal pores (b) dermal pores (c) stigmata (d) oscula

40. **The system by which a regular water current is maintained in the body of a sponge is called**
(a) ciliary system (b) circulatory system
(c) canal system (d) water vascular system

41. **Which one of the following is not a major function of the canal system?**
(a) Serves for purposes of nutrition
(b) Helps in gaseous exchange
(c) Takes part in the development of gemmules
(d) Increases the surface of the animal exposed to water

42. **Choanocytes are characteristic of**
(a) Poriferans (b) Coelenterates
(c) Flatworms (d) Annelids

43. **Sponges exhibit**
(a) cellular grade of organisation (b) tissue grade of organisation (c) both (a) and (b) (d) no organisation

44. **Coelenterates exhibit**
(a) bilateral symmetry (b) biradial symmetry
(c) radial symmetry (d) asymmetry

45. **The cavity in the body of coelenterates is called**
(a) enteron (b) coelenteron
(c) gastrocoel (d) gastrovascular cavity

46. **Which of the following terms correspond to the skeleton of each polyp of a coral?**
(a) Corrallum (b) Corallite
(c) Coenosarc (d) Perisarc

47. **The only fresh water coelenterate is**
(a) obelia (b) hydra (c) aurelia (d) physalia

48. **Which of the following is a stone coral?**
(a) Favia (b) Fungia (c) Gargonia (d) Astraea

49. **A sea anemone found growing on a gastropodan shall occupied by a hermit crab is an example for**
(a) neutralism (b) commensalism
(c) symbiosis (d) none of these

50. **Nematocysts in the tenacles of hydra help in**
(a) capturing the prey (b) killing the prey
(c) digesting the prey (d) none of these

51. **Nematocysts are also known as**
(a) cnidoblast (b) scleroblast (c) cridocil (d) none of these

52. **The body wall of coelenterates is made up of**
(a) ectoderm, mesoderm and endoderm
(b) ectoderm, mesogloaea and endoderm
(c) ectoderm and endoderm only
(d) ectoderm and mesoderm only

53. **Digestion in hydra is**
(a) intercellular (b) intracelluar (c) extracellular
(d) both intra-cellular and extracellular

54. **whcih of the following is a Coelenterate?**
(a) Silver fish (b) Devil fish
(c) Cuttle fish (d) None of these

55. **Taenia solium is the technical name of**
(a) hook worm (b) round worm (c) pin worm (d) tape worm

56. **Fasciola hepatica causes a disease called**
(a) scurvey (b) gastric ulcers
(c) liver rot (d) none of these

57. **With reference to flatworms, which one of the following statements is correct?**
(a) They are diploblastic (b) They exhibit sexual dimorphism

(c) They are radially symmetrical (d) none of these

58. **With reference to Ascaris lumbricoides which one of the following statements is correct?**

(a) They are radially symmetrical

(b) They exhibit sexual dimorphism

(c) They are free living

(d) They are segmented

59. **To which of the following groups does the Ascaris belong?**

(a) Acoelomata (b) Pseudocoelamata

(c) Eucoelomata (d) none of these

60. **The organs of attachment in tape worm are**

(a) hooks (b) suckers (c) hooks and suckers

(d) none of these

61. **What is the function of the flame cells?**

(a) Nutrition (b) Circulation

(c)Excretior (d) None of these

62. **Copulatory spicules are present in**

(a) tape worm (b) liver fluke

(c) male ascaris (d) female ascaris

63. **Wuchereria bancrafti causes**

(a) encephalitis (b) elephantiasis

(c) epilepsy (d) none of these

64. **Which of the following animals is called the nature's plough man?**

(a) Round worm (b) Flat worm

(c) Earth worm (d) Lug worm

65. **Presence of nephridia is a diagnostic feature of**

(a) Coelenterata (b) Platyhelminthes

(c) Aschelminthes (d) Annelida

66. **Nephridia are concerned with**

(a) respiration (b) digestion

(c) circulation (d) excretion

67. **Which of the following animals has the clitellum?**

(a) Millipede (b) Centipede

(c) Cattle leech (d) Earth worm

68. **Annelids are**
(a) acoelomates (b) eucoelomates
(c) pseudocoelomates (d) none of these

69. **Earthworm moves with the help of**
(a) parapodia (b) cilia (c) chaetae (d) none of these

70. **The body of leech is made up of**
(a) 20 segments (b) 22 segments
(c) 33 segments (d) 44 segments

71. **Leech is a**
(a) permanent ectoparasite (b) temporary ectoparasite
(c) not a parasite (d) endoparasite

72. **Which one of the following holds the haemoglobin in earth worm?**
(a) Blood cells (b) Plasma (c) Coelmoic fluid
(d) None of these

73. **The female genital aperture in pheritima is present in the**
(a) 12th segment (b) 13th segment
(c) 14th segment (d) 15th segment

74. **Which of the following Characters is diagnostic of Arthropoda?**
(a) Bilateral symmetry (b) Triploblastic body wall
(c) Open vascular system (d) Closed vascular system

75. **Scorpion belongs to the class**
(a) Crustacea (b) Insecta (c) Onychophora (d) none of these

76. **King crab belongs to the class**
(a) Crustacea (b) Arachnida (c) Insecta (d) none of these

77. **Head louse is a**
(a) temporary ectoparasite (b) permanent ectoparasite
(c) endoparasite (d) none of these

78. **The antennae of moth are**
(a) club shaped (b) plumose (c) coiled (d) modified

79. **Which of the following respiratory organs are present in scorpin?**
(a) Gill books (b) Book lungs (c) Trachea (d) Lungs

80. **Two pairs of wings and three pairs of legs are characterisitic of**
(a) birds (b) insects (c) arachnids (d) none of these

81. **Common name for lepisma is**
(a) jelly fish (b) silver fish (c) cuttle fish (d) devil fish

82. **Shell in molluscs is secreted by the**
(a) foot (b) gills (c) mantle (d) none of these

83. **In which of the following molluscs is there a bivalve shell?**
(a) Pila (b) Octopus (c) Nautilus (d) None of these

84. **In which of the following animals is there an ink gland?**
(a) Pila (b) Octopus (c) Fresh water mussel
(d) none of these

85. **Cuttle fish is the common name for**
(a) sepia (b) loligo (c) octopus (d) none of these

86. **The common name of octopus is**
(a) silver fish (b) cuttle fish (c) jelly fish (d) devil fish

87. **The body of fresh water mussel is attached to the inner surface of the shell by**
(a) refractor muscles (b) protractor muscles
(c) aductor muscles (d) none of the above

88. **The shell of molluscs is made up of**
(a) silicon (b) spongin (c) silicon and spongin
(d) calcium carbonate

89. **With reference to echinoderms which one of the following statements is correct?**
(a) They are exclusively marine
(b) They are exclusively fresh water
(c) They are both marine and fresh water
(d) None of these

90. **Which of the following is diagnostic of echinoderms?**
(a) Smooth skin (b) Rough skin
(c) Spiny skin (d) None of the above

91. **Pedecillaria are characteristic of**
(a) echinoderms (b) molluscs (c) arthropods
(d) none of these

92. **Echinoderms possess**
(a) water canal system (b) water vascular system
(c) ciliary canal system (d) none of these

93. **Tube feet are concerned with**
(a) circulation (b) reproduction

(c) locomotion (d) none of these

94. **Anus in brittle star is**

(a) present at the tip of the arm

(b) present on the oral side

(c) present on the aboral side

(d) absent

95. **Which one of the following vertebrates is without jaws?**

(a) Ascidian (b) Petromyzon (c) Shark (d) None of them

96. **Neck is absent in**

(a) frog (b) calotes (c) bird (d) pig

97. **Which of the following is an egg laying mammal?**

(a) Kangaroo (b) ornithorhynchus

(c) Pangolin (d) Bat

98. **Which of the following aortic arches is present in mammals?**

(a) Right (b) Left (c) Both (d) Neither left nor right

99. **Which of the following aortic arches is present in birds?**

(a) Right (b) Left (c) Both (d) Neither left nor right

100. **The caudal fin in scoliodon is**

(a) homocercal (b) heterocercal

(c) diphiceorcal (d) none of these

101. **Bony fishes have**

(a) 3 pairs of gill slits (b) 4 pairs of gill slits

(c) 5 pairs of gill slits (d) 7 pairs of gill slits

102. **Electric ray is a**

(a) bony fish . (b) fresh water fish

(c) cartilagenous fish (d) none of these

103. **Placoid scales are characteristic of**

(a) opheocephalus (b) exocoetus (c) scoliodon (d) diodon

104. **Amphibians are poikilothermic because they**

(a) live both on land and in water

(b) can adjust their body temperature to their environmental temperature (c) cannot adjust their body temperature to their environmental temperature (d) none of these

105. **Sea horse is a**

(a) mammal (b) reptile (c) fish (d) none of these

106. **Scales of reptiles are**

(a) epidermal (b) endodermal (c) subdermal (d) none

107. **Which of the following is a flying lizard?**
(a) Gecko (b) Draco (c) Calotes (d) Varanus

108. **Locomotion in paramoecium is effected by**
(a) trichocysts (b) cilia (c) nematocysts (d) none of these

109. **Asexual reproduction in paramoecium takes place by**
(a) transverse binary fission (b) longitudinal binary fission
(c) multiple fission (d) none of these

110. **Conjugation in paramoecium results in**
(a) regeneration (b) rejuvenation
(c) senility (d) none of these

111. **The micronucleus of paramoecium is concerned with**
(a) excretion (b) nutrition
(c) reproduction (d) osmoregulation

112. **The migratory pronucleus of one conjugant fuses with the stationary pronucleus of the other to form**
(a) an egg (b) zygote (c) gamete (d) synkaryon

113. **Genetic recombination in paramoecium takes place during**
(a) endomixis (b) conjugation (c) binary fission
(d) none of these

114. **The radial canals in sycon is lined by**
(a) pinnacoderm (b) choanoderm
(c) mesoderm (d) mesenchyme

115. **Which one of the following is the larva of sycon?**
(a) Planula (b) Parenchymula
(c) Ephyrula (d) Amphiblastula

116. **Which of the following cells takes part in reproduction?**
(a) Choanocyte (b) Thesocyte
(c) Pinnacocyte (d) Archaeocyte

117. **Skeleton of sycon is made up of**
(a) calcium carbonate (b) silicon
(c) spongin (d) silicon and spongin

118. **Spicules are secreted by**
(a) trophocytes (b) thesocytes
(c) scleroblasts (d) osteoblasts

119. **The cavity in the body of sycon is called**
(a) coelom (b) gastrovascular cavity
(c) spongo coel (d) none of these

120. **The incurrent canal communicates with the radial canal through**
(a) apopyle (b) prosopyle (c) ostia (d) none of these

121. **Choanocytes are also called as**
(a) columnar cells (b) collar cells
(c) cuboid cells (d) none of these

122. **The course of water current in the body of Sycon is**
(a) ostia → radial canal → apopyle → spongocoel → prosopyle → osculum
(b) ostia → incurrent canal → prosopyle → radial canal → apopyle → spongocoel → osculum
(c) ostia → incurrent canal → apopyle → prosopyle → radial canal → osculum
(d) none of the above

123. **The successive stages in the development of sycon is**
(a) blastula → amphiblastula → gastrula → adult
(b) blastula → gastrula → amphiblastula → adult
(c) amphiblastula → blastula → gastrula → adult
(d) none of the above

124. **The layer between the pinnacoderm and the choanoderm is called**
(a) mesogloea (b) mesoderm
(c) mesenchyme (d) none of these

125. **Larva of obelia is called**
(a) Parenchymula (b) Planula (c) Pennatula (d) Pleurobrachia

126. **Alternation of generations in obelia is called**
(a) metamorphosis (b) metagenesis
(c) metamerism (d) none of these

127. **Extension of perisarc around the blastostyle is called**
(a) gonotheca (b) hydrotheca
(c) ootheca (d) none of these

128. **Medusa is a free swimming**
(a) larva (b) nutritive zooid
(c) reproductive zooid (d) none of these

129. **Obelia is**
(a) monomorphic (b) dimorphic (c) trimorphic (d) polymorphic

130. **The tentacles of obelia are**
(a) hollow (b) solid (c) pinnate (d) none of these

131. **Medusae of obelia are formed by**
(a) fertilisation (b) regeneration
(c) reorganisation (d) budding

132. **The cellular tube which encloses to gastrovascular cavity in obelia is called**
(a) protosarc (b) perisarc (c) coenosarc (d) episarc

133. **Obelia is a**
(a) fresh water form (b) marine form
(c) terrestrial form (d) none of these

134. **Gastrozoids of obelia are concerned with**
(a) nutrition (b) reproduction (c) excretion (d) circulation

135. **Blastostyles of obelia are concerned with**
(a) nutrition (b) excretion
(c) circulation (d) none of these

136. **Medusa of obelia is**
(a) marine, radially symmetrical and diploblastic
(b) marine, biradially symmetrical and triploblastic
(c) fresh water, radially symmetrical and diploblastic
(d) fresh water, radially symmetrical and triploblastic

137. **Medusae are**
(a) asexual (b) super sexual (c) unisexual (d) bisexual

138. **Antennae of cockroach are**
(a) olfactory (b) auditory (c) tactile (d) chemoreceptor

139. **Ootheca of cockroach is secreted by**
(a) conglobate glands (b) collaterial glands
(c) both of them (d) none of them

140. **Male cockroach can be distinguished from the female in having**
(a) broad abdomen (b) anal styles
(c) anal cerci (d) none of these

141. **The eye of cockroach consists of a number of sub units called**
(a) matridia (b) planaria (c) cercaria (d) none of these

142. **Which of the following body parts of cockroach has ommatidia?**
(a) Antennae (b) Eyes (c) Brain (d) Legs

143. **The larva of cockroach is called**
(a) tadpole (b) caterpillar (c) mysis (d) none of these

144. **Nymph is a larva of**
(a) butterfly (b) moth (c) cockroach (d) prawn

145. **Conglobate glands are found in**
(a) female cockroaches (b) male cockroaches
(c) both of them (d) neither (a) nor (b)

146. **Sperms of cockroach mature in the**
(a) testis (b) conglobate gland
(c) spermathecae (d) mushroom gland

147. **The mouth parts of cockroach are adapted for**
(a) piercing and sucking (b) biting and cutting
(c) both of these (d) neither (a) nor (b)

148. **The ootheca of cockroach contains**
(a) 4 eggs (b) 8 eggs (c) 16 eggs (d) 32 eggs

149. **The first pair of wings in cockroach is also known as**
(a) tegmina (b) halters (c) balancers (d) none of these

150. **Which of the following is a non-poisonous snake?**
(a) Cobra (b) seasnake (c) Ratsnake (d) Krait

151. **In cockroach sensory bristles are present on**
(a) antennae (b) manidibles
(c) first maxillae (d) none of these

152. **The exoskeleton of insects is made up of**
(a) lignin (b) pectin (c) chitin (d) none of these

153. **Which is the largest part of the leg of cockroach?**
(a) Femur (b) Tibia (c) Tarsus (d) None of these

154. **The female genital aperture in cockroach is present in the sternum of**
(a) 6th segment (b) 7th segment
(c) 8th segment (d) 9th segment

155. **Each ovary of cockroach is made up of**
(a) 6 follicles (b) 8 follicles
(c) 10 follicles (d) 12 follicles

156. **Male frogs are distingushed from the females, in having**
(a) vocal sacs and copulatory pads
(b) pentadactyle limbs (c) colouration of the skin
(d) none of these

157. **Which of the following is associated with the urinogenital system of frog?**

(a) Corpora allata (b) Corpora bigemina
(c) Corpora quadrigemina (d) Corpora adiposa

158. **Gaseous exchange through the skin is called**
(a) pulmonary respiration (b) cutaneous respiration
(c) gill respiration (d) buccal respiration

159. **Colouration of the skin in frog is due to**
(a) melanophores (b) chromatophores
(c) melanin (d) none of these

160. **Changes which convert a tadpole into a young frog are called**
(a) metagenesis (b) metamorphosis
(c) symbiosis (d) none of these

161. **Release of eggs from the ovary into the body cavity is called**
(a) ovulation (b) copulation
(c) oviposition (d) none of these

162. **The intestine of tadpole larva is**
(a) short and straight (b) long and coiled
(c) short and coiled (d) none of these

163. **The testes of frog are attached to**
(a) dorsal side of the kidney (b) ventral surface of the kidney
(c) lateral side of the kidney (d) none of these

164. **The larva of frog is**
(a) herbivorus (b) carnivorus (c) omnivorous (d) frugivorous

165. **The limbs in frog are**
(a) pentadactyle type (b) hexadactyle type
(c) walking type (d) none of these

166. **In frog, crus and pes are parts of**
(a) fore limbs (b) hind limbs
(c) both of them (d) neither (a) nor (b)

167. **The blood does not clot in the blood vessels due to the presence of**
(a) fibrinogen (b) thrombin (c) heparin (d) none of these

168. **Conversion of fibrinogen into fibrin is catalysed by**
(a) thrombin (b) prothrombin
(c) thromboplastin (d) none of these

169. **What kind of an epithelium lines the intestine?**
(a) Squamous (b) Columnar (c) Cuboidal (d) None of these

170. **Matrix of the cartilage is made up of**
(a) Chondrin (b) Pectin (c) Suberin (d) None of these

171. **Cartilage is surrounded by**
(a) perichondrium (b) pericardium
(c) epicardium (d) none of these

172. **Haversian systems are present only in the bones of**
(a) amphibians (b) reptiles (c) aves (d) mammals

173. **Logitudinal contractile fibres in the muscle cells are called**
(a) white fibres (b) yellow fibres
(c) myofibrils (d) none of these

174. **the tissue which joins the muscle to the skin is called**
(a) epithelial tissue (b) muscular tissue
(c) areolar tissue (d) none of these

175. **A tendon connects**
(a) bone to bone (b) cartilage to bone
(c) muscles to bone (d) cartilage to cartilage

176. **The nonstriated muscles are present in**
(a) leg (b) arm (c) neck (d) urinary bladder

177. **The muscles present in the wall of the stomach are**
(a) cardiac muscles (b) voluntary muscles
(c) involuntary muscles (d) none of these

178. **Which one of the following is not present in the nerve cell?**
(a) Neurilemma (b) Sarcolemma (c) Dendrons (d) Axon

179. **Medullary sheath of the axon is interrupted by**
(a) synapses (b) nodes (c) nodes of Ranvier (d) none of these

180. **Which of the following proteins are present in the muscle fibre?**
(a) Actin (b) Myosin (c) both of them (d) Neither (a) nor (b)

181. **Nervous system develops from**
(a) ectoderm (b) endoderm (c) mesoderm (d) none of these

182. **Capacity of an animal to adjust to its environment is called**
(a) adoptation (b) adaptation (c) aggression (d) none of these

183. **Bat is adapted for**
(a) arboreal life (b) volant life
(c) scansorial life (d) none of these

184. **Pneumatic bones are characteristic of**
(a) bats (b) birds (c) bison (d) none of these

185. **Air sacs are associated with the lungs of**
(a) bats (b) birds (c) reptiles (d) none of these

186. **The patagium of bat is supported by**

(a) ribs (b) digits (c) feathers (d) none of these

187. **The patagium of draco is supported by**

(a) ribs (b) digits (c) feathers (d) none of these

188. **Which one of the following animals exhibit passive flight?**

(a) Bird (b) Bat (c) Draco (d) None of these

189. **Which one of the following is an aquatic mammal?**

(a) Porpoise (b) Scoliodon

(c) Crocodile (d) None of these

190. **The flight muscles of the birds are attached to the**

(a) wings (b) keel of the sternum (c) neck (d) none of these

191. **Retia mirabilia are meant for**

(a) swimming (b) storing oxygen (c) storing food (d)none of these

192. **In whales, the paddles are**

(a) modified fore limbs (b) modified hind limbs

(c) additional locomotor organs (d) none of these

193. **Birds have teeth in the**

(a) upper jaw (b) lower jaw

(c) both of them (d) neither (a) nor (b)

194. **Pecten is present in the eyes of**

(a) bat (b) pigeon (c) draco (d) none of these

195. **Which of the following birds is aquatic?**

(a) Ostrich (b) Falcon (c) Penguin (d) Parrot

MISCELLANEOUS

1. **The cell organelle connected with photorespiration is**
   (a) mitochondria (b) ribosomes
   (c) golgi complex (d) peroxisomes
2. **For the discovery of "Jumping genes" in maize, the Nobel prize was recently awarded to**
   (a) H.G. Khorana (b) Calvin (c) Haldane (d) Mc Clintock
3. **When bread is baked, it becomes fluffy due to**
   (a) fermentation (b) escape of carbon dioxide
   (c) heat (d) none of these
4. **The study of pollen grains is called**
   (a) anthology (b) embryology
   (c) palynology (d) palaeontology
5. **A group of plants called 'Kelps' belongs to**
   (a) Algae (b) Fungi (c) Gymnosperms (d) Angiosperms
6. **Virus can lead only a _____ life**
   (a) saprophytic (b) epiphytic (c) hydrophytidis (d) parasitic
7. **DNA present in chloroplast is responsible for**
   (a) heredity (b) cytoplasmic inheritance
   (c) photosynthesis (d) photorespiration
8. **In a dikaryotic cell of a mycelium, there are**
   (a) two nuclei (b) one nucleus (c) two pairs of nuclei
   (d) none of these
9. **Translocation of synthesized food takes place through**
   (a) xylem (b) parenchyma (c) phloem (d) sclerenchyma
10. **Exogenous branching is seen in**
    (a) stems (b) roots (c) lateral roots (d) all these
11. **Number of capromeres in a TMV is around**
    (a) 1300 (b) 2130 (c) 1320 (d) 3120
12. **Tyloses are the**
    (a) expansions of the inner xylem wall into the lumen
    (b) intrusions of parenchyma cells into the lumen of xylem vessel
    (c) cell wall modification of the xylem vessel
    (d) none of the above
13. **Thalloid Angiosperms belong to the family**

(a) Urticaceae (b) Liliaceae (c) Podostemaceae (d) Malvaceae

14. **Which of the following statements is correct ? A thallus is differentiated**
(a) into root, leaf and stem (b) into rhizoids, leaf and stem
(c) not into root, stem and leaf (d) into stem and root

15. **Which of the following was used to trace the steps in the dark reaction of photosynthesis ?**
(a) O^{18} (b) P^{32} (c) C^{14} (d) X-rays

16. **The sorus of Nephrolepis has a**
(a) false indusium (b) true indusium (c) both these
(d) neither (a) nor (b)

17. **The ovule of cycas has _____ integuments**
(a) three (b) two (c) one (d) no

18. **Bacterium is considered to be a plant cell because**
(a) it has bacteriochlorophyll (b) it has cell wall
(c) it has incipient nucleus (d) the botanists consider it so

19. **Pinus tree shows _____ wood**
(a) monoxylic (b) pycnoxylic (c) heart (d) soft

20. **In knol khol, the food is stored in**
(a) root (b) stem (c) leaves (d) inflorescence

21. **Which of the following is correct ?**
(a) Hypanthodium is the fruit developed from the syconus inflorescence
(b) Syconus is the fruit developed from the hypanthodium inflorescence
(c) Both the statements above are correct under different conditions
(d) None of the above statements is correct

22. **Cocoa is obtained from a species of**
(a) Cocos (b) Theobrama (c) Cocoloba (d) Coculus

23. **When $FADH_2$ enters the terminal oxidation process, ____ ATP molecules are formed**
(a) three (b) two (c) one (d) five

24. **During Kreb's cycle, COA forms citric acid with**
(a) succinic acid (b) oxaloacetic acid
(c) cisaconitic acid (d) fumeric acid

25. **Mohl's half leaf experiment is to demonstratie**

(a) the necessity of light for photosynthesis
(b) the necessity of CO_2 for photosynthesis
(c) the evolution of O_2 during photosynthesis
(d) respiration

26. Agar is obtained from
(a) Cyanophycean algae (b) Rhodophycean algae
(c) Phaeophycean algae (d) Pteridophyta

27. The natural turpentines are obtained from plants belonging to
(a) Angiosperms (b) Gymnosperms (c) Pteridophytes (d) Algae

28. "Witches broom" is a disease caused by
(a) bacteria (b) viruses (c) mycoplasma (d) fungi

29. Palmoline oil supplied through fair price shops is obtained from the fruits of
(a) Cocos nucifera (b) Metroxylon sago
(c) Elais guinensis (d) Royal palm

30. Chlorosin and vein clearing diseases are caused by
(a) viruses (b) mineral deficiencies (c) bacteria
(d) mycoplasma

31. Jack fruit is a type of fruit called
(a) drupe (b) hespiridium (c) syconus (d) sorosis

32. The rate of transpiration can be measured by a
(a) hygrometer (b) photometer (c) potometer (d) anemometer

33. An anemometer is used to measure
(a) the thickness of animals (b) water content of animals
(c) the wind velocity (d) none of these

34. Grapes belong to a type of fruits called
(a) etaerio of berries (b) berries
(c) etaerio of drupes (d) etaerio of achenes

35. Columella of capsule in moss polytrichum is made up of _____ vertical rows of cells
(a) eight (b) four (c) sixteen (d) none of these

36. The lateral conduction in leaflet of Cycas is brought about by
(a) lateral veins (b) transfusion tissue
(c) mesophyll tissue (d) parenchyma tissue

37. 'Viviparity' is seen in
(a) Rhizophora (b) Hibiscus (c) Arachis (d) Mangifera

38. The cloves are nothing but the

(a) dried fruits (b) dried twigs (c) dried flower buds
(d) axillary buds

39. **The number of autosomes in a human diploid cell is**
(a) 44 (b) 46 (c) 23 (d) 64

40. **Adventive embryos are those derived from the cells of**
(a) nucellus (b) integuments (c) both these
(d) neither (a) nor (b)

41. **The cancer drug Vincrystin is obtained from**
(a) Vanilla (b) Vinca (c) Vernomia (d) Vanda

42. **The 'Aswagandhi', an ayurvedic medicine is obtained from**
(a) Ruta gravelolens (b) Withania somnifera
(c) Papaver somnifera (d) Coriandrum sativum

43. **The 'cup-and-saucer' plant is technically called as**
(a) Hamscoldea (b) Conea tomentos
(c) Petrea volubilis (d) Cananga odorata

44. **Any winged fruit is called a**
(a) minged drupe (b) samara (c) berry (d) sorosis

45. **Maize is technically a**
(a) seed (b) millet (c) fruit (d) cereal

46. **The actual edible part in hespiridium fruit (citrus) is unicellular outgrowths on**
(a) mesocarp (b) endocarp (c) epicarp (d) all these

47. **The technique of paper chromatography can be used to separate**
(a) the plant pigments (b) the plant proteins
(c) oils and fats (d) none of these

48. **Botanical name of cotton plant is**
(a) Hibiscus esculentus (b) Cannabis sativa
(c) Gossypium hirsutum (d) Pisum sativum

49. **In an apocarpous gynoecium the carpels are**
(a) free (b) united (c) half united (d) none of these

50. **Botanical name of banana is**
(a) Mimosa pudica (b) Musa paradisiaca
(c) Michelid champaka (d) Achras sapota

51. **Aestivation is the mode of arrangement of _____ in a bud**
(a) sepals (b) petals (c) tepals (d) all these

52. **In cauliflower the food is stored in**

(a) leaves (b) stem (c) inflorescence (d) none of these

53. **Sugarcane is a**

(a) hemp (b) hedge (c) grass (d) millet

54. **Greens are rich in**

(a) sugars (b) vitamins (c) minerals (d) fats

55. **Carrots are rich in**

(a) vitamin B (b) vitamin C (c) vitamin A (d) vitamin D

56. **Rubber is obtained from**

(a) Euphorbia geniculata (b) Hevea braziliensis

(c) Hamelia pratens (d) Tectona grandis

57. **In Cocos nucifera the edible part is the**

(a) mesocarp (b) endocarp (c) endosperm (d) pericarp

58. **Famous ayurvedic drug called 'Sarpagandhi' is obtained from**

(a) Withania somnifera (b) Rauwolfia serpentine

(c) apver somnifera (d) Cinnamomum zeylanicum

59. **Which of the following is correct ?**

(a) Sweet potato is a stem tuber (b) Potato is a root tuber

(c) Both potato and sweet potato are stem tubers

(d) Sweet potato is a root tuber and potato is a stem tuber

60. **Maize is botanically called as**

(a) Zia maize (b) Zea mays (c) Zea maize (d) Zia mays

61. **Nu-bodies are found in the**

(a) nucleus (b) chromosomes (c) chloroplasts (d) mitochondria

62. **It is not advisable to sleep under trees during night because**

(a) trees give out oxygen (b) trees give out carbondioxide

(c) it will be very dark (d) it will be very cold

63. **The mericarps are found in**

(a) regma (b) cremocarp (c) carcerulus (d) all these

64. **Coleoptile is the**

(a) Protective sheath for radical (b) stem of maize

(c) protective sheath for plumule

(d) shoot system of maize plant

65. **In a caryopsis fruit, the pericarp and the seed coat are**

(a) kept apart (b) fused (c) very hard (d) very soft

66. **Schizomycetes includes**

(a) bacteria (b) yeasts (c) Mycoplasma (d) viruses

67. **Interphase is divided into three stages sequentially as follows**
(a) S, G_1 and G_2 (b) G_1, G_2 and S (c) G_1, S and G_2
(d) all the above under different conditions

68. **Microbodies are of two types namely,**
(a) lysosomes and ribosomes (b) ribosomes and centrosomes
(c) peroxisomes and glyoxysomes (d) none of these

69. **The 'bouquet stage' of the chromosomes is seen during _____ stage**
(a) diplotene (b) leptotene (c) zygotene (d) pachytene

70. **Which of the following is correct ?**
(a) There are two kinetochores present in the region of a centromere
(b) There are two centromeres present in the region of a kinetochore
(c) There is one kinetochore present in the region of a centromere
(d) There is one centromere present in the region of a kinetochore

71. **At each ascending step of a food chain, there is**
(a) gain of energy (b) loss of energy (c) both (a) and (b)
(d) neither (a) nor (b)

72. **Antidote for malaria is**
(a) ascorbid acid (b) folic acid (c) asprin (d) quinine

73. **Somersaulting movements are characteristic of**
(a) amoeba (b) obelia (c) hydra (d) sea anemone

74. **Which one of the following phyla includes the largest number of animals ?**
(a) Coelenterata (b) Porifera (c) Aschelminthes (d) Arthropoda

75. **Insects are too active because**
(a) blood vascular system is open
(b) blood vascular system is closed
(c) all the organs are directly supplied with air
(d) none of these

76. **Which one of the following is the main portion of the stomach ?**
(a) Cardiac (b) Fundic (c) Pyloric (d) none of these

77. **Which of the following chordates does not posses the vertebral column ?**
(a) Sea horse (b) Eel (c) Amphioxus (d) Frog

78. **The first vertebra in the vertebral column is called**
(a) Axis (b) Atlas (c) Sacral vertebra (d) None of these

79. **Heparin was first isolated from**
(a) stomach (b) small intestine (c) liver (d) pancreas

80. **The study of blood and its disorders is known as**
(a) Haemolysis (b) Haematoma (c) Haematology
(d) Haemorrhage

81. **Volume of blood in an average adult varies between**
(a) 3 to 4 litres (b) 4 to 5 litres
(c) 5 to 6 litres (d) 6 to 7 litres

82. **The dormant state of decreased metabolism in which certain animals pass dry season is called**
(a) migration (b) mutation (c) aestivation (d) hibernation

83. **The skin of toad is**
(a) smooth (b) slimy (c) rough (d) none of these

84. **The diencephalon lies immediately in front of the**
(a) fore-brain (b) midbrain (c) hind-brain
(d) none of these

85. **Blushing is caused due to**
(a) utilisation of glucose in the muscles of the face
(b) constriction of small arteries of the face
(c) dialation of small arteries of the face
(d) none of these

86. **Cerebellum is a part of**
(a) fore-brain (b) midbrain (c) hind-brain (d) none of these

87. **The branch of science that deals with the betterment of living conditions is called**
(a) Eugenics (b) Ecology (c) Euthenics (d) Ethnology

88. **The science of ancestoral history is called**
(a) ontogene (b) phylogeny (c) evolution (d) none of these

89. **Study of bones is called**
(a) ornithology (b) osteology (c) histology (d) cytology

90. **The part of the skeleton which protects the spinal cord is**

(a) cranium (b) vertebral column (c) branchial arches
(d) none of these

91. **The walls of the stomach shows a series of contractions passing from the anterior to the posterior end, called**
(a) repressive waves (b) progressive waves
(c) peristaltic waves (d) none of these

92. **Vitamin 'A' is very essential for**
(a) growth (b) production of digestive enzymes
(c) vision (d) all these

93. **Which one of the following diseases is sex linked ?**
(a) Diabetes (b) Cancer (c) Night blindness
(d) Colour blindness

94. **If plants were not there, animals would have also disappeared because of the lack of**
(a) shelter (b) clothing (c) food (d) none of these

95. **Which of the following is the richest source of carbohydrates ?**
(a) Wheat (b) Rice (c) Barley (d) Maize

96. **The eye consists of three layers only. Mark the fourth one which does not fit in here**
(a) Sclerotic (b) Choroid (c) Retina (d) Mucosa

97. **Lachrymal glands are responsible for the secretion of**
(a) hormones (b) enzymes (c) tear (d) saliva

98. **Sweat glands in mammals are primarily concerned with**
(a) regulation of water content (b) killing of skin bacteria
(c) regulation of body temperature (d) removal of excess salts

99. **Antibiotics are drugs which are used to cure**
(a) malaria (b) cancer (c) nervous disorders
(d) bacterial diseases

100. **The spinal cord runs through the**
(a) Haversian canal (b) vertebraterial canal
(c) vertebral column (d) none of these

101. **The site of gaseous exchange in the lungs of mammals is**
(a) trachea (b) branchus (c) branchiole (d) alveoli

102. **Vitamin 'C' is chemically known as**
(a) folic acid (b) carbolic acid (c) acetic acid
(d) ascorbic acid

103. **Which of the following statements is true ?**

(a) All organisms are made up of cells

(b) During the process of oxidation energy is liberated

(c) There is struggle for existence in nature

(d) All the statements are true

104. Scurvy is caused by the deficiency of the vitamin

(a) A (b) B (c) C (d) D

105. Vitamin B_1 is chemically known as

(a) Pyridoxine (b) Tocopherol (c) Thiamine (d) Ascorbic acid

106. A male child is born only if the

(a) mother takes healthy and nutritious food

(b) mother is stronger than the father

(c) father is stronger than the mother

(d) child carries the XY combination of sex chromosomes

107. The colour of the bolld in cockroach is

(a) blue (b) red (c) white (d) none of these

108. Circulation of blood was discovered by

(a) Alexander Flemming (b) Roentgen (c) Caxton (d) Harvey

109. Malarial parasite was discovered by

(a) Robert Koch (b) Rober Brown (c) Ronald Ross (d) Roentgen

110. Which of the following persons performed the first human heart transplant operation ?

(a) Dr Ronald Ross (b) Dr Hahnemann (c) Dr Christian Bernard

(d) none of them

111. An animal which is most active during daytime is called

(a) nocturnal (b) diurnal (c) biannual (d) annual

112. What are the cavities of the brain known as ?

(a) Fossae (b) Vacuoles (c) Ventricles (d) None of these

113. Which of the following hormones triggers changes in males at the time of puberty ?

(a) Progestrone (b) Oestrogen (c) Testosterone

(d) None of these

114. To which of the following categories does the mammalian kidney belong ?

(a) Pronephric (b) mesonephric (c) Metanehphric

(d) Archinephric

115. What is the unit of blood pressure ?

(a) Grams per square centimetre (b) Pounds per square inch
(c) mm of water (d) mm of mercury

116. **Which of the following scientists discovered and isolated insulin ?**
(a) Fleming (b) Watson and Crick
(c) Banting and Best (d) Jenner

117. **Which of the following gives violet colour with iodine solution ?**
(a) Glycogen (b) Glucose (c) starch (d) All of these

118. **Which of the following is present in the protoplasm ?**
(a) Carbon (b) Hydrogen (c) Nitrogen (d) All of these

119. **Damage to the cerebellum would largely affect**
(a) memory (b) sensation (c) voluntary acts
(d) involuntary acts

120. **Which of the following is a contageous disease ?**
(a) Polio (b) Typhoid (c) Cancer (d) Measles

121. **Which of the following is mismatched ?**
(a) Robert Hooke - Cell (b) Hugo de Vries - Evolution
(c) Mendel - Heredity (d) Kollikar - Mitochondria

122. **Deficiency of vitamin A may lead to**
(a) rickets (b) scurvy (c) night blindness (d) beri beri

123. **Deficiency of vitamin B may lead to**
(a) scurvy (b) rickets (c) beri beri (d) none of these

124. **Deficiency of vitamin D may lead to**
(a) scurvy (b) rickets (c) pellagra (d) none of these

125. **A good dietary source of vitamin C is**
(a) pulses (b) fresh milk (c) boiled eggs (d) fresh oranges

126. **Study of plants and animals in relation to their environment is called**
(a) Ethology (b) Eugenics (c) Ecology (d) Cytology

127. **Study of functional aspects such as nutrition, growth, reproduction etc., is called**
(a) Anatomy (b) Taxonomy (c) Physiology (d) none of these

128. **A sustained contraction of muscles is called**
(a) contraction period (b) recovery period (c) tonus (d) tetany

129. **Which of the following is the most important factor for the development of a new species ?**

(a) Extensive inbreeding (b) Extensive out breeding
(c) Geographical isolation (d) None of these

130. **Which of the following provides direct evidence for organic evolution ?**
(a) Embryology (b) Histology (c) Cytology (d) Palaeantology

131. **The vital centres for control of heart rate, blood pressure and respiratory rate are located in**
(a) midbrain (b) cerebrum (c) cerebellum (d) medulla

132. **Pneumonia is caused by the inflammation of the**
(a) heart (b) kidneys (c) lungs (d) none of these

133. **Respiration in protozoans takes place through**
(a) general surface (b) contractive vacuole (c) food vacuole
(d) none of these

134. **Ostia in sponges are meant to**
(a) digest the food (b) pass out the water current
(c) admit the water current (d) none of these

135. **Which of the following groups exhibit polymorphism ?**
(a) Protozoans (b) Sponges (c) Coelentrates (d) None of these

136. **In the female Ascoris,**
(a) posterior end is curved (b) anterior end is curved
(c) both the ends are curved (d) posterior end is almost straight

137. **Mammary glands are modified**
(a) mucous glands (b) sudorific glands
(c) sebaceous glands (d) none of these

138. **Carpus callosum is present in the brain of**
(a) fish (b) frog (c) snake (d) rabbit

139. **Teeth are thecodont in**
(a) frong (b) snake (c) crocodile (d) pigeon

140. **Uropygeal gland is present in**
(a) fish (b) frog (c) bird (d) mammal

141. **Which of the following are cheek teeth ?**
(a) Premolars (b) Molars (c) Both (a) and (b)
(d) Neither (a) nor (b)

142. **Antennae are plumose in**
(a) cockroach (b) butterfly (c) moth (d) prawn

143. **The most numerous leucocytes are**
(a) Basophils (b) Eosinophils (c) Neutrophils (d) none of these

144. **Ventricle begins to show a division into two by an interventricular septum in**
(a) fishes (b) frogs (c) reptiles (d) birds

145. **Which of the following fibres are present in the elastic cartilage ?**
(a) Collagen fibres (b) Elastic fibres
(c) Both (a) and (b) (d) Neither (a) nor (b)

146. **Experiments performed by Spallanzani was related to artificial synthesis of**
(a) genes (b) amino acids (c) carbohydrates (d) none of these

147. **Whales respire through**
(a) external gills (b) internal gills (c) general body surface
(d) lungs

148. **Reduced neck, webbed feet and laterally compressed tail are**
(a) scansorial adaptations (b) cursorial adapatations
(c) fossorial adaptations (d) aquatic adaptations

149. **Morphology includes**
(a) Histology (b) Cytology (c) Anatomy (d) All of these

150. **HMS Beagle was**
(a) pathologist (b) name of an animal
(c) british warship (d) none of these

151. **Charles Darwin was**
(a) an Englishman (b) a French (c) an American (d) a Russian

152. **Lamarck was**
(a) an American (b) a Dutch (c) a French (d) a German

153. **Hugo devries was**
(a) an Englishman (b) a Dutch (c) a French (d) a German

PRACTICE PAPER

Time: 90 minutes Max. Marks: 100

ANSWER ANY 100 QUESTIONS

1. **Cyanophage is a virus**
   (a) that contains cyanide (b) that infects blue green algae
   (c) that controls the activity of blue green algae
   (d) none of these
2. **Which of the following is a prokaryotic group ?**
   (a) Green algae (b) Red algae (c) Blue green algae
   (d) Brown algae
3. **The existence of viruses was discovered by**
   (a) Iwanowsky (b) Stanley (c) Robert Hooke (d) Pasteur
4. **The theory of natural selection was proposed by**
   (a) Aristotle (b) Theophrastus (c) Charles Darwin
   (d) Robert Koch
5. **The work on "jumping genes" brought Nobel prize to**
   (a) H.G. Khorana (b) Nirenberg (c) Mc Clintock (d) Haldane
6. **The parasitic bacterium that fixes nitrogen is**
   (a) Azatobacter (b) Rhizobium (c) Acetobacter
   (d) nitrifying bacterium
7. **The largest ovules in the plant kingdom are produced by**
   (a) Michelia (b) Hibiscus (c) Ficus (d) Cycas
8. **Saccharomyces octosporus is**
   (a) an alga (b) a fungus (c) a moss (d) a fern
9. **The monomeric units in the nucleic acids are**
   (a) nucleosides (b) nucleotides (c) nucleoproteins
   (d) all the above.
10. **The total number of genes that are located in a haploid set of chromosomes is called**
    (a) a genome (b) a haploid (c) an aneuploid
    (d) none of the above
11. **The system of binomial nomenclature was introduced by**
    (a) Charles Darwin (b) Carolus Linnaeus (c) Thaeophrostus
    (d) Bauhin
12. **Solanum melongena is the botanical name for**
    (a) potato (b) sweet potato (c) brinjal (d) chilly

13. **The edible part in Cocos nucifera is the**
(a) mesocarp (b) endocarp (c) endosperm (d) pericarp

14. **The largest angiosperm flower is produced by**
(a) Helianthus (sunflower) (b) Hibiscus
(c) Erythrina (d) Rafflesia

15. **The duplication of DNA takes place during**
(a) prophase (b) interphase (c) metaphase
(d) anaphase and telephase

16. **A 70s ribosome has two sub-units of**
(a) 50s and 20s (b) 40s and 30s (c) 50s and 30s (d) 60s and 10s

17. **The symmetry of a regular flower is always**
(a) actinomorphic (b) zygomorphic (c) asymmetrical
(d) none of these

18. **A phaeophycean alga contains a brown pigment called**
(a) xanthophyll (b) phycoxanthin (c) fucoxanthin (d) carotene

19. **Vincrystin, a cancer drug, is obtained from**
(a) Catheranthus roseus (b) Leucas aspera
(c) Ocimum sanctum (d) Agave americana

20. **Datura fruit is a _____ capsule.**
(a) septicidal (b) loculicidal (c) poricidal (d) septifragal

21. **In an epigynous flower ovary is**
(a) superior (b) semisuperior (c) inferior (d) all these

22. **The diameter of a DNA molecule is around**
(a) 34 A° (b) 3.4 A° (c) 20 A° (d) 4.3 A°

23. **The formation of m-RNA from DNA is called**
(a) translation (b) transcription (c) translocation
(d) transformation

24. **Which of the following is correct ? A gene is**
(a) the segment of DNA that can produce a sensible protein
(b) the unit of heredity (c) made up of DNA (d) all these

25. **A sterile pistil is called a**
(a) staminode (b) pistillode (c) dormant pistil (d) none of these

26. **Collateral, closed vascular bundles are found in**
(a) monocot stem (b) dicot stem (c) monocot root
(d) dicot root

27. **Photosynthetic units are called as**
(a) thylakoids (b) quantasomes (c) chlorophylls (d) granna

28. **The major pigment that is directly involved in photosynthesis is**
(a) chlorophyll (b) xanthophyll (c) chlorophylla (d) carotene

29. **Yeast cells are rich in**
(a) vitamin B (b) vitamin C (c) vitamin a (d) vitamin K

30. **Phyllotaxy is the mode of arrangement of**
(a) flower on the stem (b) ovules inside the ovary
(c) leaves on the stem (d) none of these

31. **Racker's particles are found in**
(a) chloroplasts (b) mitochondria (c) ribosomes
(d) endoplasmic reticulum

32. **Anemyophily is the pollination by**
(a) insects (b) animals (c) wind (d) water

33. **Meiosis takes place during the formation of**
(a) spores and gametes (b) zygotes (c) sex organs (d) all these

34. **The hydathodes are concerned with**
(a) transpiration (b) guttation (c) photosynthesis
(d) aerobic respiration

35. **As a result of complete oxidation of a glucose molecule, the number of ATP molecules formed is**
(a) 30 (b) 83 (c) 38 (d) 10

36. **The periderm constitutes**
(a) phelloderm and the phellum (b) phellum and phellogen
(c) phellogen and phelloderm
(d) phellogen, phelloderm and the phellum

37. **Radial vascular bundles are found in**
(a) stems (b) roots (c) leaves (d) all these

38. **Guard cell differs from other epidermal cells in having**
(a) nucleus (b) chloroplast (c) cytoplasm (d) mitochondria

39. **The site of dark reaction in photosynthesis is the**
(a) granum (b) stroma lamellae (c) stroma (d) cytoplasm

40. **The end product of glycolysis is**
(a) oxalo acetic acid (b) pyruvic acid (c) phosphoglyceric acid
(d) citric acid

41. **The oxygen has liberated during photosynthesis is coming from**
(a) CO_2 (b) H_2O (c) RuDP (d) none of these

42. **Raphides are the crystals of**

(a) calcium carbonate (b) magnesium sulphate
(c) calcium oxalate (d) calcium bicarbonate

43. A semi-permeable membrane is involved in
(a) diffusion (b) osmosis (c) imbibition (d) all these

44. The laws of heredity were founded by
(a) Charles Darwin (b) Gregor Mendel (c) De Vries (d) Lamarck

45. Respiration is
(a) a catabolic process (b) an anabolic process
(c) an inevitable process (d) a good process

46. Which of the following is correct ?
(a) Growth is a permanent change
(b) Growth is an irreversible change
(c) Growth results in increase of dry weight
(d) all these

47. Nodoc is found on
(a) m-RNA (b) t-RNA (c) r-RNA (d) all these

48. Phellogen is a _____ meristem.
(a) primary (b) secondary (c) lateral (d) intercalary

49. Interferon is a
(a) protein (b) carboydrate (c) medicine (d) toxic substance

50. A polypeptide chain is made up of
(a) amino acids (b) nucleotides (c) proteins (d) none of these

51. The energy currency in a living system is
(a) ADP (b) ATP (c) NADP (d) FAD

52. The primary acceptor of CO_2 during photosynthesis is
(a) RuMP (b) RuDP (c) NADP (d) PGA

53. Mohl's half leaf experiment is conducted to demonstrate the necessity of _____ for photosynthesis.
(a) CO_2 (b) light (c) oxygen (d) chlorophyll

54. The transpiration rate is measured by a
(a) photometer (b) auxonometer (c) potometer (d) hygrometer

55. Osmosis is concerned with the movement of _____ molecules
(a) solute (b) solvent (c) gas (d) all these

56. During rainy season the wooden doors swell because of
(a) osmosis (b) diffusion (c) imbibition (d) absorption

57. Munch's mass flow hypothesis explains the

(a) transpiration pull in plants

(b) absorption of water en masse by roots

(c) ascent of sap

(d) translocation of solutes in plants

58. Naturally occuring auxin is

(a) indole-3-acetic acid (b) indole-3-butyric acid

(c) 2,4-dichlorophenoxy acetic acid (d) Naphthalene acetic acid

59. The leaves of trees wither away during winter due to

(a) cold (b) lack of photosynthetic capacity

(c) formation of ABA (d) formation of cytokinin

60. Genetically dwarf plants can be made to grow tall by the application of

(a) auxins (b) cytokinins (c) gibberellins (d) pesticides

61. Which of the following is a weedicide ?

(a) IAA (b) IBA (c) NAA (d) 2,4-D

62. Which of the following blood groups is a universal donor ?

(a) A (b) B (c) O (d) AB

63. Collision-tension theory was proposed by

(a) Ganong (b) Farmer (c) Dixon and Joly (d) Munch

64. The plant tendrils exhibit

(a) phototropism (b) haptotropism (c) geotropism

(d) hydrotropism

65. The plant Mimosa pudica exhibits _____ movement.

(a) seismonastic (b) thermonastic (c) photonastic (d) epinastic

66. Pseudopodia are diagnostic of

(a) Infusoria (b) Mastigophora (c) Porozoa (d) Rhizopoda

67. Gemmation in sycon takes place during

(a) summer (b) winter (c) rainy season (d) none of these

68. The medusae of obelia

(a) are produced asexually (b) reproduce sexually

(c) are free living (d) all of these

69. Flame cells of flat worms are concerned with

(a) nutrition (b) circulation (c) respiration (d) excretion

70. The excretory pore in Ascaris is placed about 2 mm from the

(a) posterior end dorsally (b) anterior end dorsally

(c) posterior end ventrally (d) anterior end ventrally

71. What is the number of eyes in the Indian cattle leech ?

(a) 2 pairs (b) 3 pairs (c) 4 pairs (d) 5 pairs

72. Peripatus is

(a) oviparous (b) viviparous (c) ovoviviparous (d) none of these

73. How many ovarian tubules are present in each ovary of cockroach ?

(a) 6 (b) 8 (c) 10 (d) 12

74. The strongest part of the leg of cockroach is

(a) coxa (b) tibia (c) femur (d) trochanter

75. Shell in octopus is

(a) internal (b) external (c) sometimes (a) sometimes (b)
(d) absent

76. Which one of the following is diagnostic of echinoderms ?

(a) Spiny skin (b) Water vascular system (c) Marine habitat
(d) All of these

77. Which one of the following chordates does not possess the vertebral column ?

(a) Amphioxus (b) Eel (c) Whale (d) Snake

78. The fitness of an organism to its environment is called

(a) adoptation (b) adaptation (c) allergy (d) none of these

79. Which one of the following is a connective tissue ?

(a) Bone (b) Blood (c) Cartilage (d) All of these

80. Genetic recombination in Paramoecium takes place during

(a) binary fission (b) endomixis (c) conjugation
(d) none of these

81. Which one of the following is found associated with the reproductive system of frog ?

(a) Corpora allata (b) Corpora bigemina
(c) Corpora adiposa (d) Corpora quadrigemina

82. Bones of birds are

(a) hollow (b) pneumatic (c) membranous (d) none of these

83. Amniotes are

(a) those animals which excrete in the form of ammonia
(b) animals which utilize amino acids
(c) vertebrates which secrete amino acids
(d) vertebrates characterised by having an amnion during their development

84. The dormant state of decreased metabolism in which certain animals pass winter season is called

(a) aestivation (b) migration (c) hibernation (d) diapause

85. Androgens are

(a) a kind of genes

(b) substances which possess feminizing activities

(c) substances which possess masculanizing activities

(d) none of these

86. The fluid filled sac around the embryo in reptiles, birds and mammals is called

9a) allantois (b) chorion (c) amnion (d) none of these

87. The discharge of a mature ovum from the graafian follicle of the ovary is called

(a) oogenesis (b) oolysis (c) ovulation (d) none of these

88. The nerve fibre which conducts the nerve impulses away from the cell body is called

(a) dendron (b) axon (c) axial filament (d) none of these

89. An enzyme which catalyses the hydrolysis of starch is called

(a) protease (b) lipase (c) amylase (d) lactase

90. Active transport means transfer of substances

(a) into the cell across the cell membrane

(b) out of the cell across the cell membrane

(c) into or out of the cell across the cell membrane

(d) into or out of the cell across the cell membrane which requires expenditure of energy

91. The amount of energy expended by the body just to keep alive, when no food is being digested and no muscular work is being done is called

(a) basal anabolic rate (b) basal metabolic rate

(c) both (a) and (b) (d) neither (a) nor (b)

92. A protein produced in response to the presence of some foreign substance in the blood is called

(a) antigen (b) antibody (c) antibiotic (d) none of these

93. Symptoms are

(a) disease transmitters (b) disease causing organisms

(c) control measures

(d) visible outward expressions of diseases

94. **What is the approximate percentage of water in the protoplasm ?**
(a) 50 (b) 70 (c) 80 (d) 90

95. **When you are afraid the mouth becomes dry because**
(a) water in the mouth is rapidly absorbed
(b) water evaporates quickly from the mouth
(c) mucous is not secreted by the salivary glands
(d) none of these

96. **The organ that co-ordinates different functions of the body is**
(a) heart (b) lung (c) brain (d) liver

97. **Scientific study of birds, their habits etc., is called**
(a) entomology (b) ethnology (c) ornithology (d) none of these

98. **Living together of 2 or more different species in the same habitat in which one may be benefited and the others are neither benefited nor harmed is called**
(a) parasitism (b) mutualism (c) commensalism
(d) none of these

99. **Which of the following are leucocytes ?**
(a) Lymphocytes and monocytes
(b) Eosinophils and basophils
(c) Neutrophils (d) All these

100. **The part of the skeleton which gives protection to the brain is called**
(a) skull (b) vertebral column (c) cranium (d) none of these

101. **Which one of the following is mis-matched ?**
(a) Pancreas - enterokinase (b) Intestinal juice - amylopsin
(c) Salivary juice - steapsin (d) All of these

102. **How many mesodermal somites are present in a 24 hour chick embryo ?**
(a) 5 pairs (b) 7 pairs (c) 9 pairs (d) 11 pairs

103. **The largest number and variety of epidermal glands are present in**
(a) reptiles (b) birds (c) mammals (d) none of these

104. **A convincing experiment in support of Oparin's views was conducted by**
(a) Spllanzani (b) Francisco Redi (c) Louis Pasteur
(d) Urey and Miller

105. Sexual reproduction is considered to be an important factor in organic evolution because it provides for

(a) the production of genes (b) the destruction of genes

(c) the only way to continue any species

(d) great variations in the offsprings

106. Appearance of ancestral characters such as multiple mammae, tail etc., in new born babies is known as

(a) homologus (b) analogus (c) atavistic (d) vestigial

107. The primary source of energy in an ecosystem is

(a) protein (b) carbohydrate (c) fat (d) sunlight

108. Gir forest is in

(a) Goa (b) Gujarat (c) Andhra Pradesh (d) Karnataka

109. Industrial pollution means

(a) pollution of the industries

(b) pollution caused by the industries

(c) both (a) and (b) (d) neither (a) nor (b)

110. DDT is a

(a) natural pollutant (b) biodegradable pollutant

(c) nondegradable pollutant (d) none of these

111. Actin and myosin are

(a) structural proteins (b) carrier proteins

(c) contractile proteins (d) none of these

112. Frog is

(a) ammonotelic (b) ureotelic (c) uricotelic (d) none of these

113. Urea is transported by

(a) RBC (b) WBC (c) platelets (d) plasma

114. Aorta takes its origin from

(a) right auricle (b) left auricle (c) left ventricle

(d) right ventricle

115. Transmission of nerve impulses is a

(a) chemical process (b) electrical process

(c) photochemical process (d) electrochemical process

116. Islets of Langerhans are located in the

(a) liver (b) brain (c) kidney (d) pancreas

117. Hyposecretion of thyroxine in adults causes

(a) astheneia (b) myxiderma (c) both (a) and (b)

(d) neither (a) nor (b)

118. Which one of the following hormones stimulates the development of mammary glands and milk secretion ?
(a) FSH (b) TSH (c) LTH (d) LH

119. The mammalian sperm produces a lytic enzyme called
(a) sucrase (b) lactase (c) hyaluronidase (d) hyaluronic acid

120. Graafian follicle is surrounded by
(a) theca externa (b) theca interna (c) both (a) and (b)
(d) neither (a) nor (b)

121. Cleavage in frog is
(a) meroblastic (b) holoblastic equal
(c) holoblastic unequal (d) none of these

122. Monodiscoidal type of placenta is present in
(a) pig (b) horse (c) moneky (d) human beings

123. Development of an ovum into a larva or adult without being fertilized is called
(a) Neoteny (b) Pedogenesis (c) Parthenogenesis
(d) None of these

124. Urea is removed from the blood as it passes through the
(a) heart (b) spleen (c) liver (d) kidney

125. The colour of blood in cockroach is
(a) red (b) blue (c) white (d) none of these

ANSWERS TO EXERCISES
BOTANY

1. ULTRASTRUCTURE OF CELL

1. (c) 2. (b) 3. (a) 4. (d) 5. (a) 6. (b) 7. (b) 8. (c) 9. (a) 10. (b) 11. (c) 12. (b)
13. (b) 14. (b) 15. (d) 16. (c) 17. (a) 18. (b) 19. (c) 19a. (b) 19b. (c)
19c. (d) 19d. (d) 19e. (d) 19f. (a) 19g. (a) 19h. (c) 20. (c) 21. (c) 22. (b)
23. (b) 24. (a) 25. (c) 26, (b) 27. (b) 28. (b) 29. (b) 30. (a) 31. (b) 32. (b)
33. (c) 34. (a) 35. (c) 36. (b) 37. (b) 38. (b) 39. (c) 40. (d) 41. (c) 42. (b)
43. (b) 44. (a) 45. (a)

2. CHROMOSOMES AND NUCLEIC ACIDS

1. (b) 2. (b) 3. (c) 4. (c) 5. (a) 6. (b) 7. (c) 8. (a) 9. (c) 10. (c) 11. (c) 12. (a)
13. (b) 14. (c) 15. (b) 16. (b) 17. (a) 18. (b) 19. (c) 20. (b) 21. (a) 22. (b)
23. (a) 24. (b) 25. (c) 26. (c) 27. (b) 28. (c) 29. (c) 30. (a) 31. (b) 32. (d)
33. (c) 34. (a) 35. (b) 36. (c) 37. (b) 38. (a) 39. (c) 40. (b) 41. (b) 42. (a)
43. (c) 44. (a) 45. (c) 46. (c) 47. (c) 48. (a) 49. (c) 50. (a) 51. (b) 52. (c)
53. (c) 54. (a) 55. (b) 56. (b) 57. (c) 58. (b) 59. (a) 60. (c) 61. (b)

3. GENETIC CODE AND PROTEIN SYNTHESIS

1. (b) 2. (c) 3. (c) 4. (b) 5. (c) 6. (d) 7. (b) 8. (b) 9. (b) 10. (b) 11. (b) 12. (c)
13. (b) 14. (a) 15. (c) 16. (c) 17. (c) 18. (c) 19. (d) 20. (c) 21. (c) 22. (a)
23. (b) 24. (b) 25. (c)

4. CELL DIVISION

1. (c) 2. (c) 3. (b) 4. (b) 5. (c) 6. (b) 7. (c) 8. (a) 9. (c) 10. (c) 11. (c) 12. (b)
13. (c) 14. (a) 15. (c) 16. (d) 17. (a) 18. (b) 19. (c) 20. (a) 21. (b) 22. (c)
23. (c) 24. (d) 25. (c) 26. (c) 27. (a) 28. (b) 29. (b) 30. (c)

5. HEREDITY

1. (b) 2. (b) 3. (b) 4. (a) 5. (c) 6. (c) 7. (b) 8. (a) 9. (b) 10. (a) 11. (c) 12. (b)
13. (c) 14. (a) 15. (c) 16. (c) 17. (b) 18. (a) 19. (c) 20. (b) 21. (b) 22. (b)
23. (c) 24. (b) 25. (b) 26. (b) 27. (a) 28. (c) 29. (a) 30. (b) 31. (b) 32. (c)
33. (b) 34. (b) 35. (c) 36. (b) 37. (b) 38. (b) 39. (b) 40. (b) 41. (b) 42. (a)
43. (c)

6. WATER RELATIONS

1. (b) 2. (b) 3. (c) 4. (c) 5. (c) 6. (c) 7. (b) 8. (c) 9. (b) 10. (d) 11. (b) 12. (b)
13. (b) 14. (a) 15. (b) 16. (a) 17. (b) 18. (a) 19. (c) 20. (a) 21. (c) 22. (b)
23. (c) 24. (b) 25. (b) 26. (c) 27. (b) 28. (a) 29. (b) 30. (a) 31. (b) 32. (c)
33. (b) 34. (d) 35. (b) 36. (b) 37. (b) 38. (a) 39. (b) 40. (b) 41. (b) 42. (b)
43. (b) 44. (c) 45. (c) 46. (b) 47. (a) 48. (b) 49. (b) 50. (b) 51. (b) 52. (b)
53. (a) 54. (b) 55. (b) 56. (a) 57. (b) 58. (a) 59. (a) 60. (b) 61. (c) 62. (c)
63. (c) 64. (b) 65. (b) 66. (b) 67. (c) 68. (a) 69. (b) 70. (a) 71. (c) 72. (b)
73. (c) 74. (c) 75. (c) 76. (c) 77. (c) 78. (b) 79. (b) 80. (a) 81. (b) 82. (c)
83. (b) 84. (c) 85. (b) 86. (c) 87. (c) 88. (c) 89. (b) 90. (b)

7. PHOTOSYNTHESIS

1. (c) 2. (c) 3. (b) 4. (b) 5. (c) 6. (c) 7. (c) 8. (c) 9. (a) 10. (b) 11. (b) 12. (b)
13. (a) 14. (a) 15. (d) 16. (b) 17. (b) 18. (c) 19. (b) 20. (b) 21. (b) 22. (b)
23. (c) 24. (a) 25. (b) 26. (c) 27. (a) 28. (c) 29. (c) 30. (c) 31. (b) 32. (c)
33. (c) 34. (b) 35. (a) 36. (c) 37. (b) 38. (c) 39. (d) 40. (c) 41. (b) 42. (b)

43. (b) 44. (b) 45. (b) 46. (c) 47. (c) 48. (c) 49. (a) 50. (a) 51. (b) 52. (b)
53. (b) 54. (b) 55. (c) 56. (c) 57. (c) 58. (b)

8. RESPIRATION

1. (b) 2. (b) 3. (b) 4. (b) 5. (b) 6. (c) 7. (a) 8. (b) 9. (d) 10. (d) 11. (b) 12. (a)
13. (d) 14. (a) 15. (b) 16. (a) 17. (b) 18. (a) 19. (c) 20. (a) 21. (b) 22. (b)
23. (b) 24. (c) 25. (a) 26. (c) 27. (b) 28. (c) 29. (b) 30. (c) 31. (b) 32. (b)
33. (a)34. (b) 35. (d) 36. (c) 37. (b) 38. (c) 39. (c) 40. (c) 41. (c) 42. (c)
43. (a) 44. (a) 45. (a) 46. (a) 47. (b) 48. (c) 49. (b) 50. (c) 51. (c) 52. (d)
53. (b) 54. (c) 55. (c) 56. (b) 57. (b) 58. (c) 59. (b)

9. GROWTH AND DEVELOPMENT

1. (a) 2. (d) 3. (b) 4. (c) 5. (a) 6. (a) 7. (c) 8. (b) 9. (c) 10. (a) 11. (b) 12. (c)
13. (b) 14. (a) 15. (b) 16. (c) 17. (d) 18. (a) 19. (c) 20. (a) 21. (c) 22. (c)
23. (a) 24. (b) 25. (c) 26. (c) 27. (a) 28. (b) 29. (c) 30. (a) 31. (c) 32. (b)
33. (c) 34. (b) 35. (c) 36. (b) 37. (c) 38. (c) 39. (c) 40. (b) 41. (a) 42. (b)
43. (c) 44. (b) 45. (b) 46. (a) 47. (c) 48. (a) 49. (b) 50. (c)

10. PLANT MOVEMENTS

1. (b) 2. (b) 3. (c) 4. (b) 5. (c) 6. (c) 7. (b) 8. (c) 9. (c) 10. (b) 11. (b) 12. (a)
13. (c) 14. (c) 15. (b) 16. (c) 17. (a) 18. (c) 19. (c) 20. (a) 21. (b) 22. (b)
23. (c) 24. (a) 25. (c) 26. (b) 27. (c) 28. (b) 29. (c) 30. (d) 31. (b) 32. (b)
33. (b) 34. (c) 35. (b)

11. PLANT TISSUES

1. (b) 2. (b) 3. (c) 4. (b) 5. (b) 6. (c) 7. (d) 8. (c) 9. (d) 10. (c) 11. (c) 12. (c)
13. (a) 14. (b) 15. (b) 16. (a) 17. (c)18. (c) 19. (b) 20. (a) 21. (c) 22. (a)
23. (b) 24. (c) 25. (b) 26. (c) 27. (a) 28. (b) 29. (b) 30. (c) 31. (c) 32. (b)
33. (c) 34. (b) 35. (b) 36. (b) 37. (b) 38. (b) 39. (b) 40. (c) 41. (a) 42. (b)
43. (b) 44. (c) 45. (c) 46. (b) 47. (b) 48. (b) 49. (c) 50. (b) 51. (b) 52. (b)
53. (a) 54. (b) 55. (c) 56. (b) 57. (d) 58. (b) 59. (d) 60. (c) 61. (a) 62. (c)
63. (b) 64. (b) 65. (b) 66. (c) 67. (c) 68. (c) 69. (b) 70. (d) 71. (c) 72. (c)
73. (a) 74. (c) 75. (c) 76. (b) 77. (b) 78. (c) 79. (c) 80. (b)

12. ANATOMY OF PLANT PARTS

1. (a) 2. (c) 3. (b) 4. (c) 5. (b) 6. (b) 7. (d) 8. (c) 9. (c) 10. (b) 11. (c) 12. (d)
13. (b) 14. (c) 15. (c) 16. (b) 17. (b) 18. (a) 19. (b) 20. (b) 21. (c) 22. (d)
23. (c) 24. (b) 25. (b) 26. (c) 27. (b) 28. (b) 29. (c) 30. (b) 31. (c) 32. (a)
33. (b) 34. (c) 35. (b) 36. (c) 37. (b) 38. (a) 39. (c) 40. (c) 41. (c) 42. (d)
43. (c) 44. (d) 45. (b) 46. (b) 47. (c) 48. (d) 49. (c) 50. (c) 51. (c) 52. (b)
53. (c) 54. (b) 55. (b) 56. (c) 57. (c) 58. (c) 59. (c) 60. (b)

FIRST P.U.C. PORTIONS TO MAKE YOU MORE PERFECT

1. (c) 2. (a) 3. (b) 4. (b) 5. (c) 6. (a) 7. (c) 8. (b) 9. (c) 10. (c) 11. (b) 12. (b)
13. (a) 14. (b) 15. (c) 16. (b) 17. (c) 18. (c) 19. (c) 20. (b) 21. (c) 22. (c)
23. (c) 24. (d) 25. (c) 26. (c) 27. (c) 28. (d) 29. (c) 30. (c) 31. (d) 32. (d)
33. (c) 34. (c) 35. (a) 36. (c) 37. (b) 38. (c) 39. (a) 40. (c) 41. (c) 42. (c)
43. (a) 44. (c) 45. (d) 46. (c) 47. (c) 48. (b) 49. (a) 50. (c) 51. (b) 52. (c)
53. (c) 54. (b) 55. (d) 56. (c) 57. (b) 58. (b) 59. (b) 60. (b) 61. (b) 62. (b)
63. (c) 64. (c) 65. (c) 66. (c) 67. (d) 68. (c) 69. (c) 70. (c) 71. (b) 72. (b)
73. (b) 74. (c) 75. (d) 76. (c) 77. (c) 78. (a) 79. (b) 80. (b) 81. (a) 82. (a)
83. (d) 84. (c) 85. (b) 86. (b) 87. (c) 88. (d) 89. (c) 90. (b) 91. (d) 92. (c)

93. (c) 94. (b) 95. (b) 96. (d) 97. (c) 98. (a) 99. (c) 100. (c) 101. (c) 102. (c)
103. (d) 104. (c) 105. (c) 106. (b) 107. (a) 108. (b) 109. (b) 110. (b) 111. (b)
112. (b) 113. (b) 114. (b) 115. (c) 116. (a) 117. (c) 118. (a) 119. (c) 120. (c)
121. (b) 122. (b) 123. (b) 124. (c) 125. (b) 126. (c) 127. (c) 128. (c) 129. (c)
130. (c) 131. (b) 132. (b) 133. (b) 134. (d) 135. (c) 136. (b) 137. (b) 138. (b)
139. (d) 140. (c) 141. (d) 142. (b) 143. (d) 144. (c) 145. (b) 146.(c) 147. (d)
148. (c) 149. (b) 150. (d)

ZOOLOGY

1A. ORIGIN OF LIFE

1. (b) 2. (c) 3. (d) 4. (c) 5. (d) 6. (c) 7. (c) 8. (b) 9. (c) 10. (b) 11. (c) 12. (d)
13. (b) 14. (b) 15. (b) 16. (d) 17. (a) 18. (b) 19. (c) 20. (d) 21. (c) 22. (c)
23. (c) 24. (a) 25. (b) 26. (d) 27. (d) 28. (a)

1B. ORGANIC EVOLUTION

1. (b) 2. (d) 3. (b) 4. (b) 5. (a) 6. (a) 7. (b) 8. (c) 9. (b) 10. (b) 11. (c) 12. (c)
13. (c) 14. (c) 15. (b) 16. (c) 17. (b) 18. (c) 19. (c) 20. (b) 21. (b) 22. (d)
23. (b) 24. (b) 25. (b) 26. (b) 27. (b) 28. (d) 29.(b) 30. (c) 31. (b) 32. (b)
33. (c) 34. (c) 35. (b) 36. (c)

2. ECOLOGY

1. (c) 2. (c) 3. (b) 4. (a) 5. (d) 6. (a) 7. (c) 8. (c) 9. (b) 10. (b) 11. (b) 12. (c)
13. (c) 14. (a) 15. (b) 16. (c) 17. (b) 18. (a) 19. (a) 20. (c) 21. (d) 22. (b)
23. (b) 24. (b) 25, (c) 26. (d) 27. (d) 28. (b) 29. (c) 30. (b) 31. (b) 32. (b)
33. (b) 34. (b) 35. (b) 36. (d) 37. (b) 38. (d) 39. (b) 40. (a) 41. (c) 42. (c)
43. (b) 44. (c) 45. (b) 46. (b) 47. (d) 48. (b) 49. (c) 50. (a) 51. (b) 52. (c)
53. (a) 54. (a) 55. (b) 56. (b) 57. (a) 58. (c) 59. (b) 60. (a) 61. (b) 62. (b)
63. (b) 64. (c) 65. (c) 66. (c) 67. (d) 68. (b) 69. (d)

3. METABOLITES, pH AND TRANSPORT ACROSS MEMBRANES

1. (b) 2. (b) 3. (c) 4. (c) 5. (c) 6. (b) 7. (d) 8. (a) 9. (b) 10. (d) 11. (b) 12. (b)
13. (c) 14. (a) 15. (d) 16. (c) 17. (c) 18. (b) 19. (c) 20. (b) 21. (a) 22. (a)
23. (a) 24. (b) 25. (b) 26. (b) 27. (b) 28. (b) 29. (a) 30. (a) 31. (b) 32. (c)
33. (d) 34. (c) 35. (a) 36. (a) 37. (c) 38. (c) 39. (b) 40. (b) 41. (d) 42. (b)
43. (c) 44. (a) 45. (c) 46. (a) 47. (b) 48. (c) 49. (a) 50. (b) 51. (a) 52. (b)
53. (a) 54. (a) 55. (d) 56. (b) 57. (a) 58. (b) 59. (d) 60. (d) 61. (c) 62. (c)
63. (a) 64. (b) 65. (a) 66. (a) 67. (c) 68. (a) 69. (a) 70. (b) 71. (c) 72. (b)
73. (d) 74. (d) 75. (c) 76. (b)

4. ANIMAL PHYSIOLOGY

A. DIGESTION

1. (b) 2. (b) 3. (c) 4. (d) 5. (c) 6. (b) 7. (d) 8. (b) 9. (c) 10. (a) 11. (c) 12. (b)
13. (b) 14. (b) 15. (b) 16. (b) 17. (d) 18. (d) 19. (c) 20. (c) 21. (c) 22. (d)
23. (b) 24. (a) 25. (b) 26. (a) 27. (d) 28. (c) 29. (d) 30. (b) 31. (d) 32. (c)
33. (c) 34. (c) 35. (c) 36. (b) 37. (c) 38. (a) 39. (b) 40. (d) 41. (a) 42. (b)
43. (b) 44. (a) 45. (a) 46. (c) 47. (b) 48. (c) 49. (b) 50. (a) 51. (b) 52. (b)
53. (b) 54. (b) 55. (b) 56. (d) 57. (c) 58. (b) 59. (b) 60. (d) 61.(b) 62. (b)
63. (c) 64. (c) 65. (d) 66. (c) 67. (b)

B. EXCRETION

1. (b) 2. (b) 3. (b) 4. (c) 5. (a) 6. (b) 7. (c) 8. (c) 9. (c) 10. (b) 11. (b) 12. (a)
13. (d) 14. (c) 15. (d) 16. (b) 17. (b) 18. (d) 19. (d) 20. (c) 21. (a) 22. (c)

23. (d) 24. (b) 25. (b) 26. (d) 27. (a) 28. (b) 29. (a) 30. (b) 31. (c) 32. (a)
33. (a) 34. (b)

C. CIRCULATION

1. (c) 2. (b) 3. (c) 4. (c) 5. (a) 6. (d) 7. (b) 8. (b) 9. (b) 10. (b) 11. (a) 12. (c)
13. (a) 14. (c) 15. (b) 16. (b) 17. (a) 18. (d) 19. (d) 20. (b) 21. (b) 22. (b)
23. (b) 24. (c) 25. (d) 26. (c) 27. (a) 28. (b) 29. (a) 30. (c) 31. (c) 32. (b)
33. (b) 34. (b) 35. (b) 36. (c) 37. (b) 38. (b) 39. (b) 40. (d) 41. (d) 42. (b)
43. (c) 44. (d)

D. CONDUCTION OF NERVE IMPULSE

1. (c) 2. (c) 3. (c) 4. (b) 5. (a) 6. (a) 7. (c) 8. (b) 9. (b) 10. (b) 11. (b) 12. (a)
13. (b) 14. (d) 15. (b) 16. (b) 17. (c) 18. (d) 19. (d) 20. (c)

E. CHEMICAL COORDINATION

1. (c) 2. (b) 3. (d) 4. (c) 5. (b) 6. (d) 7. (c) 8. (c) 9. (c)10.(b) 11. (a) 12. (b)
13. (d) 14. (a) 15. (b) 16. (d) 17. (b) 18. (c) 19. (b) 20. (b) 21. (c) 22. (c)
23. (b) 24. (d) 25. (a) 26. (c) 27. (b) 28. (c) 29. (b) 30. (b) 31. (b) 32. (c)
33. (c) 34. (c) 35. (b) 36. (b) 37. (b) 38. (a) 39. (c) 40. (c) 41. (d) 42. (b)
43. (c) 44. (a) 45. (b) 46. (d) 47. (d) 48. (d) 49. (c) 50. (c) 51. (b) 52. (c)
53. (c) 54. (a) 55. (b) 56. (b) 57. (d) 58. (c) 59. (a) 60. (a) 61. (a) 62. (d)
63. (c) 64. (a) 65. (b) 66. (c) 67. (c) 68. (b) 69. (d) 70. (b) 71. (a) 72. (c)
73. (a) 74. (a) 75. (d) 76. (b)

5.EMBRYOLOGY

1. (d) 2. (b) 3. (b) 4. (b) 5. (a) 6. (c) 7. (c) 8. (c) 9. (a) 10. (b) 11. (c) 12. (c)
13. (c) 14. (b) 15. (b) 16. (b) 17. (c) 18. (b) 19. (b) 20. (b) 21. (c) 22. (a)
23.(d) 24. (a) 25. (d) 26. (c) 27. (b) 28. (c) 29. (c) 30. (b) 31. (c) 32. (b)
33. (d) 34. (d) 35. (b) 36. (a) 37. (b) 38. (b) 39. (b) 40. (b) 41. (b) 42. (b)
43. (d) 44. (c) 45. (d) 46. (b) 47. (d) 48. (b) 49. (a) 50. (c) 51. (b) 52. (c)
53. (a) 54. (a) 55. (c) 56. (c) 57. (c) 58. (c) 59. (c) 60. (c) 61. (c) 62. (c)
63. (c) 64. (c) 65. (c) 66. (b) 67. (b) 68. (c) 69. (c) 70. (b) 71. (c) 72. (b)
73. (c) 74. (a) 75. (c) 76. (c) 77. (c) 78. (d) 79. (b) 80.(b) 81. (b) 82. (c)
83. (c) 84. (b) 85. (b) 86. (b) 87. (b) 88. (b) 89. (c) 90. (a) 91. (c) 92. (c)
93. (c) 94. (c) 95. (c) 96. (c) 97. (c) 98. (c) 99. (c) 100. (c) 101. (d) 102. (b)
103. (c) 104. (a) 105. (b) 106. (b) 107. (b) 108. (c) 109. (c) 110. (b) 111. (c)
112. (b) 113. (c) 114. (d) 115. (c) 116. (c) 117. (b) 118. (c) 119. (a) 120. (c)
121. (c) 122. (d) 123. (c) 124. (c) 125. (d) 126. (a) 127. (b) 128. (b) 129. (b)
130. (d) 131. (c) 132. (c) 133. (d) 134. (b) 135. (b) 136. (c) 137. (b) 138. (a)
139. (c) 140. (c) 141. (d) 142. (b) 143. (c) 144. (d) 145. (a) 146. (c) 147. (c)
148. (c) 149. (b) 150. (b) 151. (c) 152. (c) 153. (d) 154. (a) 155. (b) 156. (d)
157. (d) 158. (d) 159. (d) 160. (c) 161. (d) 162. (c) 163. (c) 164. (c) 165. (c)
166. (b) 167. (c) 168. (c) 169. (c) 170. (c) 171. (d) 172. (b) 173. (c) 174. (c)
175. (c) 176. (c) 177. (c) 178. (b) 179. (c) 180. (d) 181. (b) 182. (c) 183. (d)
184. (c) 185. (b) 186. (c) 187. (d) 188. (c) 189. (b) 190. (c) 191. (b) 192. (a)
193. (d) 194. (c) 195. (c) 196. (c) 197. (c) 198. (b) 199. (b) 200. (b) 201. (a)
202. (d) 203. (c) 204. (a) 205. (b) 206. (c) 207. (b) 208. (c) 209. (b) 210. (d)
211. (b) 212. (c) 213. (c) 214. (c) 215. (b) 216. (d) 217. (c) 218. (c) 219. (b)

FIRST YEAR P.U.C. PORTIONS TO MAKE YOU MORE PERFECT

1. (c) 2. (b) 3. (b) 4. (a) 5. (b) 6. (c) 7. (d) 8. (c) 9. (c) 10. (b)11. (b) 12. (b)

13. (b) 14. (c) 15. (b) 16. (c) 17. (b) 18. (b) 19. (d) 20. (b) 21. (b) 22. (c)
23. (c) 24. (b) 25. (a) 26. (b) 27. (d) 28. (d) 29. (b) 30. (d) 31. (b) 32. (c)
33. (a) 34. (c) 35. (c) 36. (b) 37. (c) 38. (b) 39. (b) 40. (c) 41. (c) 42. (a)
43. (a) 44. (c) 45. (d) 46. (b) 47. (b) 48. (d) 49. (b) 50. (b) 51. (a) 52. (b)
53. (d) 54. (d) 55. (d) 56. (c) 57. (d) 58. (b) 59. (b) 60. (c) 61. (c) 62. (d)
63. (b) 64. (c) 65. (d) 66. (d) 67. (d) 68. (b) 69. (c) 70. (c) 71. (b) 72. (b)
73. (c) 74. (c) 75. (d) 76. (b) 77. (b) 78. (b) 79. (b) 80. (b) 81. (b) 82. (c)
83. (d) 84. (b) 85. (a) 86. (d) 87. (c) 88. (d) 89. (a) 90. (c) 91. (a) 92. (b)
93. (c) 94. (d) 95. (b) 96. (a) 97. (b) 98. (b) 99. (a) 100. (b) 101. (b) 102. (c)
103. (c) 104. (b) 105. (c) 106. (a) 107. (a) 108. (b) 109. (a) 110. (b) 111. (c)
112. (d) 113. (b) 114. (b) 115. (d) 116.(d) 117. (a) 118. (c) 119. (c) 120. (b)
121. (b) 122. (b) 123. (a) 124. (c) 125. (b) 126. (b) 127. (a) 128. (c) 129. (c)
130. (b) 131. (d) 132. (c) 133. (b) 134. (a) 135. (d) 136. (a) 137. (c) 138. (c)
139. (b) 140. (b) 141. (d) 142. (b) 143. (d) 144. (c) 145. (b) 146. (d) 147. (b)
148. (c) 149. (a) 150. (c) 151. (a) 152. (c) 153. (b) 154. (d) 155. (b) 156. (a)
157. (d) 158. (b) 159. (b) 160. (b) 161. (a) 162. (b) 163. (b) 164. (a) 165. (a)
166. (b) 167. (c) 168. (a) 169. (b) 170. (a) 171. (a) 172. (d) 173. (c) 174. (c)
175. (c) 176. (d) 177. (c) 178. (b) 179. (c) 180. (c) 181. (a) 182. (b) 183. (b)
184. (b) 185. (b) 186. (b) 187. (a) 188. (c) 189. (a) 190. (b) 191. (b) 192. (a)
193. (d) 194. (b) 195. (c)

MISCELLANEOUS

1. (d) 2. (d) 3. (b) 4. (c) 5. (a) 6. (d) 7. (b) 8. (a) 9. (c) 10. (a) 11. (b) 12. (b)
13. (c) 14. (c) 15. (c) 16. (b) 17. (c) 18. (b) 19. (b) 20. (b) 21. (b) 22. (b)
23. (b) 24. (b) 25. (b) 26. (c) 27. (b) 28. (c) 29. (c) 30. (a) 31. (d) 32. (c)
33. (c) 34. (b) 35. (c) 36. (b) 37. (a) 38. (c) 39. (a) 40. (c) 41. (b) 42. (b)
43. (a) 44. (b) 45. (c) 46. (b) 47. (a) 48. (c) 49. (a) 50. (b) 51. (d) 52. (c)
53. (c) 54. (c) 55. (c) 56. (b) 57. (c) 58. (b) 59. (d) 60. (b) 61. (b) 62. (b)
63. (d) 64. (c) 65. (b) 66. (a) 67. (c) 68. (c) 69. (b) 70. (a) 71. (b) 72. (d)
73. (c) 74. (d) 75. (c) 76. (b) 77. (c) 78. (b) 79. (c) 80. (c) 81. (c) 82. (c)
83. (c) 84. (b) 85. (c) 86. (c) 87. (c) 88. (b) 89. (b) 90. (b) 91. (c) 92. (d)
93. (d) 94. (c) 95. (d) 96, (d) 97. (c) 98. (c) 99. (d) 100. (c) 101. (d) 102. (d)
103. (d) 104. (c) 105. (c) 106. (d) 107. (c) 108. (d) 109. (c) 110. (c) 111. (b)
112. (c) 113. (c) 114. (c) 115. (d) 116. (c) 117. (c) 118. (d) 119. (c) 120. (d)
121. (b) 122. (c) 123. (c) 124. (b) 125. (d) 126. (c) 127. (c) 128. (d) 129. (c)
130. (d) 131. (d) 132. (c) 133. (a) 134. (c) 135. (c) 136. (d) 137. (c) 138. (d)
139. (c) 140. (c) 141. (c) 142. (c) 143. (c) 144. (c) 145. (c) 146. (d) 147. (d)
148. (d) 149. (d) 150. (c) 151. (a) 152. (c) 153. (b)

PRACTICE PAPER

1. (b) 2. (c) 3. (a) 4. (c) 5. (c) 6. (b) 7. (d) 8. (b) 9. (b) 10. (a) 11. (b) 12. (c)
13. (c) 14. (d) 15. (b) 16. (c) 17. (a) 18. (c) 19. (a) 20. (d) 21. (c) 22. (c)
23. (b) 24. (d) 25. (b) 26. (a) 27. (b) 28. (c) 29. (a) 30. (c) 31. (b) 32. (c)
33. (a) 34. (b) 35. (c) 36. (d) 37. (b) 38. (b) 39. (c) 40. (b) 41. (b) 42. (c)
43. (b) 44. (b) 45. (a) 46. (a) 47. (b) 48. (b) 49. (a) 50. (a) 51. (b) 52. (b)
53. (a) 54. (b) 55. (c) 56. (d) 57. (d) 58. (a) 59. (c) 60. (c) 61. (d) 62. (c)
63. (c) 64. (d) 65. (a) 66. (d) 67. (d) 68. (d) 69. (d) 70. (d) 71. (d) 72. (c)
73. (b) 74. (c) 75. (d) 76. (d) 77. (a) 78. (b) 79. (d) 80. (c) 81. (c) 82. (b)
83. (d) 84. (c) 85. (c) 86. (c) 87. (c) 88. (b) 89. (c) 90. (d) 91. (b) 92. (b)

93. (d) 94. (b) 95. (c) 96. (c) 97. (c) 98. (c) 99. (d) 100. (c) 101. (d) 102. (a)
103. (c) 104. (d) 105. (d) 106. (c) 107. (d) 108. (b) 109. (b) 110. (c) 111. (b)
112. (b) 113. (d) 114. (c) 115. (d) 116. (d) 117. (c) 118. (c) 119. (c) 120. (c)
121. (c) 122. (d) 123. (c) 124. (d) 125. (c)

CONSTITUTION OF INDIA

ART IVA
FUNDAMENTAL DUTIES

51A. Fundamental duties – It shall be the duty of every citizen of India –

(a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;

(b) to cherish and follow the noble ideals which inspired our national struggle for freedom;

(c) to uphold and protect the sovereignty, unity and integrity of India;

(d) to defend the country and render national service when called upon to do so;

(e) to promote harmony and the spirit of common brotherhood amongst all the people of India's transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;

(f) to value and preserve the rich heritage of our composite culture;

(g) to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures;

(h) to develop the scientific temper, humanism and the spirit of inquiry and reform;

(i) to safeguard public property and to abjure violence;

(j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement.

Published by
EXCELLENT EDUCATIONAL ENTERPRISES

(Dedicated to promote applications of Computers in Education)

21, III Main Road, Rammohanapuram, Sriramapuram, Bangalore-560 021